PUBLIC HEALTH REPORTS

VOL. 43 OCTOBER 19, 1928 NO. 42

HEALTH STUDIES OF NEGRO CHILDREN

II. The Physical Status of the Urban Negro Child: a Study of 5,170 Negro School Children in Atlanta, Ga.

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Introduction

In the census year 1920, there were 10,463,131 negroes in the United States. Of this number more than 2,500,000 were between 5 and 14 years of age, an age period usually covering the elementary school years. In the fall of 1925, when this study was undertaken, it is estimated that the negro population falling within this age group was nearly 2,750,000.

It seemed highly desirable that a population group as large as this should receive a larger share of study than had previously been accorded the group in question. In view of this deficiency in the field of child hygiene, the United States Public Health Service undertook a study of the physical and mental status of negro school children in Atlanta, Ga., during the school year 1925–26. The investigation was made possible through the cooperation of the State department of health and the city department of public instruction. An earlier paper (1) reported the result of an intelligence study of a part of the Atlanta group.

Colored teachers exclusively are employed in the colored elementary schools in Atlanta, and it is probably safe to say that as a class they are better trained than the average of colored teachers in other cities of the same size. This is due to the fact that there are several institutions in Atlanta for the higher education of negroes, and young colored men and women may obtain this education without incurring the expense of travel and residence away from home. These teachers gave their hearty cooperation and were most helpful.

The director of the unit was assisted by two nurses besides the psychologist who made the mental tests. With this staff it was possible to measure and examine physically 5,170 children during the school year. The children were examined with the trunk partially disrobed and with shoes and stockings removed.

Extent of Urbanization of the Group

Since the investigation was intended as a study of the urban negro child, it was necessary to exclude those children who had had little urban life. Every effort was made to determine the length of time each child had lived in Atlanta or some other city, as in no other way was it possible to establish the degree of urbanization of the group. There were 285 children the length of whose city residence could not be determined, leaving a group of 4,885 concerning whom residence records were obtained. By very careful inquiry it was found that almost 60 per cent of these children had spent their entire lives in Atlanta or some other city—most of them in Atlanta.

The extent of urbanization of the remaining children is shown in Table 1.

TABLE 1.—*Extent of urbanization of part of the group not life long city residents*

Age of child	Per cent living in city half or more of life	Age of child	Per cent living in city half or more of life
6	90	11	43
7	67	12	48
8	76	13	44
9	52	14	42
10	56		

The data submitted show conclusively that the group under consideration, almost 5,000 in number, was a distinctly urban group. Almost 60 per cent of the children had lived in some city all their lives. Of the remainder, from 52 to 90 per cent of the younger children, and from 42 to 48 per cent of the older ones had spent at least half their lives in the city. Of all the children whose record of residence could be obtained, only 324 (6.6 per cent) had lived in an urban environment less than four years. This is significant when it is realized that about 80 per cent of these children were 12 years or under, and 52 per cent 10 or under. A negligible number of children (only 22) were outside the 14-year group. It is probable that this group of approximately 5,000 is the largest group of urban negro children, from 6 to 14 years of age, which has been so intensively studied up to the present time. Nine hundred and fifty-two of the city-born boys and girls were the children of parents both of whom were also city born, so that we have a group of almost a thousand second-generation urban negro children.

Since only 22 of the children studied were beyond the 14-year age group, the records of these few older pupils are not included in the discussion of all phases of the study. This is true of the anthropometric data, which are limited to the ages 6 to 14 years, inclusive, comprising a group of 5,148 children—2,425 boys and 2,723 girls.

In Table 2 will be found the average measurements of this group by age and sex. These include seven measurements, viz, two heights—sitting and standing—weight, chest circumference and two diameters, and vital capacity, together with the cephalic index and head module derived from three head measurements. A more detailed examination of this data will lead to a better appreciation of the size of the urban negro child.

TABLE 2.—*Average measurements of negro boys and girls of different ages in Atlanta, Ga.*

	Age at nearest birthday								
	6	7	8	9	10	11	12	13	14
Weight (pounds):									
Boys	45.01	47.79	53.04	58.59	65.58	70.72	78.63	86.90	94.82
Girls	42.24	46.40	51.93	58.57	64.70	72.99	83.44	93.45	103.17
Standing height (inches):									
Boys	44.95	46.28	48.85	50.61	52.80	54.46	56.85	58.51	60.25
Girls	44.46	46.33	48.71	51.05	53.31	55.55	57.92	60.01	61.52
Sitting height (inches):									
Boys	24.11	24.68	25.57	26.44	27.22	27.90	28.68	29.37	30.20
Girls	23.70	24.57	25.49	26.48	27.27	28.22	29.26	30.22	31.15
Chest circumference (inches):									
Boys	21.85	22.23	23.07	23.57	24.46	25.01	25.77	26.54	27.41
Girls	21.18	21.93	22.80	23.40	24.23	24.91	25.81	26.65	27.34
Transverse chest diameter (centimeters):									
Boys	18.77	19.16	19.74	20.40	20.95	21.53	22.27	22.93	23.66
Girls	18.22	18.73	19.43	20.13	20.86	21.51	22.54	23.40	24.24
Antero-posterior chest diameter (centimeters):									
Boys	14.27	14.48	14.81	15.13	15.57	15.89	16.36	16.88	17.33
Girls	13.64	13.91	14.31	14.76	15.11	15.55	16.19	16.68	17.08
Vital capacity (liters):									
Boys	.945	1.001	1.140	1.290	1.428	1.567	1.759	1.891	2.064
Girls	.878	.962	1.077	1.226	1.379	1.534	1.717	1.951	2.131
Cephalic index:									
Boys	77.29	77.31	76.81	76.97	76.80	76.69	76.37	76.25	74.84
Girls	77.43	77.41	77.22	77.19	76.78	76.61	76.78	76.64	76.53
Head module:[1]									
Boys	15.09	15.03	15.23	15.23	15.32	15.40	15.52	15.59	15.68
Girls	14.58	14.67	14.78	14.86	14.95	15.06	15.21	15.28	15.35
Number of children:									
Boys	127	290	284	303	323	330	336	248	184
Girls	150	290	325	321	329	367	370	280	291

[1] Head module is the average of the length, breadth, and height of the head.

Comparison within the group.—A comparison of some of these measurements brings out the differences between the sexes at different ages. Figure 1 shows graphically the standing and sitting heights, weight, and chest diameter curves of the group. Between the ages of 8 and 9 the girls begin to exceed the boys in standing height, and maintain their advantage throughout the period of study.

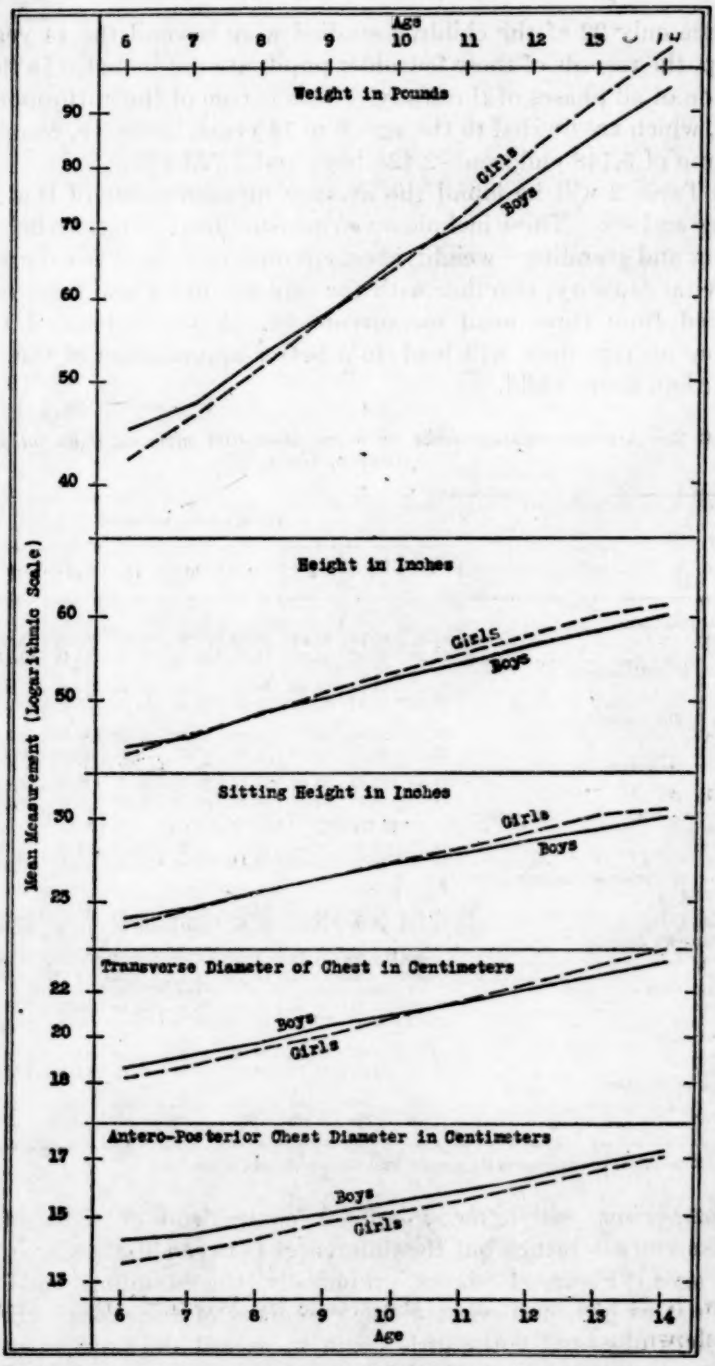

FIG. 1.—Average measurements of negro school children in Atlanta, Ga., by age and sex

The percentage excess rises steadily to the thirteenth year, when there is a slight decrease.

The weight curves of the sexes cross definitely between 10 and 11, probably nearer 10, from which age the girls are heavier than the boys, with no tendency to return to the male level up to 14.

The curves of sitting height (fig. 1) are very similar to those of standing height, the measurements of the girls exceeding those of the boys after the age of 9.

In width of chest the girls are below the boys to about the age of 11, when their curve crosses that of the boys and remains above to the age of 14, with an increasing percentage excess. In depth of chest the girls are consistently lower than the boys, though the percentage of male excess decreases with age. The younger girls have a smaller chest than the boys, while the older girls have a broader chest, though less deep, than the boys. The differences are small, however, in both diameters.

The differences in the chest circumference and cephalic index are very slight.

A careful estimation was made of the measurements of the children with respect to the birthplace both of the child and his parents. It was found that the differences—even between the city-born children of city-born parents and the country-born children of country-born parents—were so slight and inconsistent as to have no significance. Evidently the extent of urbanization of the group was such as to affect (if there be any effect) the average of all ages and both sexes of the entire group.

Comparison of urban and rural negro children.—In order to determine the effect, if any, of urbanization on the growth and development of the negro child, it is necessary to compare urban and rural children of similar age and sex, and, if possible, under similar climatic conditions. Fortunately, there have been published studies of the standing height and weight of negro children in Rutherford County, Tenn. (2), and of standing and sitting height, weight, and vital capacity of negro children for rural districts of Alabama (3). Since Tennessee and Alabama are contiguous to Georgia, there is a certain general similarity of climate in this group of States. The Tennessee children "had removed their shoes and heavier wraps," and the Alabama boys wore "only a cotton shirt and trousers and the girls correspondingly light clothing." It is evident, therefore, that these urban and rural negro children form reasonably comparable groups.

The heights and weights of the 1,384 Rutherford County (Tenn.) negro boys and girls, from the article by Mustard and Waring (2), are shown in Table 3.

TABLE 3.—*Heights and weights of 1,384 Rutherford County (Tenn.) negro school children, by age and sex (Mustard and Waring)*

	Age at nearest birthday								
	6	7	8	9	10	11	12	13	14
Height:									
Boys	44.8	47.0	49.3	51.1	53.5	55.0	57.5	58.5	60.9
Girls	45.2	47.5	48.9	52.1	53.5	55.6	58.9	60.5	61.7
Weight:									
Boys	45.6	50.1	56.2	61.5	67.8	73.8	82.6	89.8	99.4
Girls	45.0	49.3	53.0	63.5	66.6	75.5	89.5	99.4	107.1

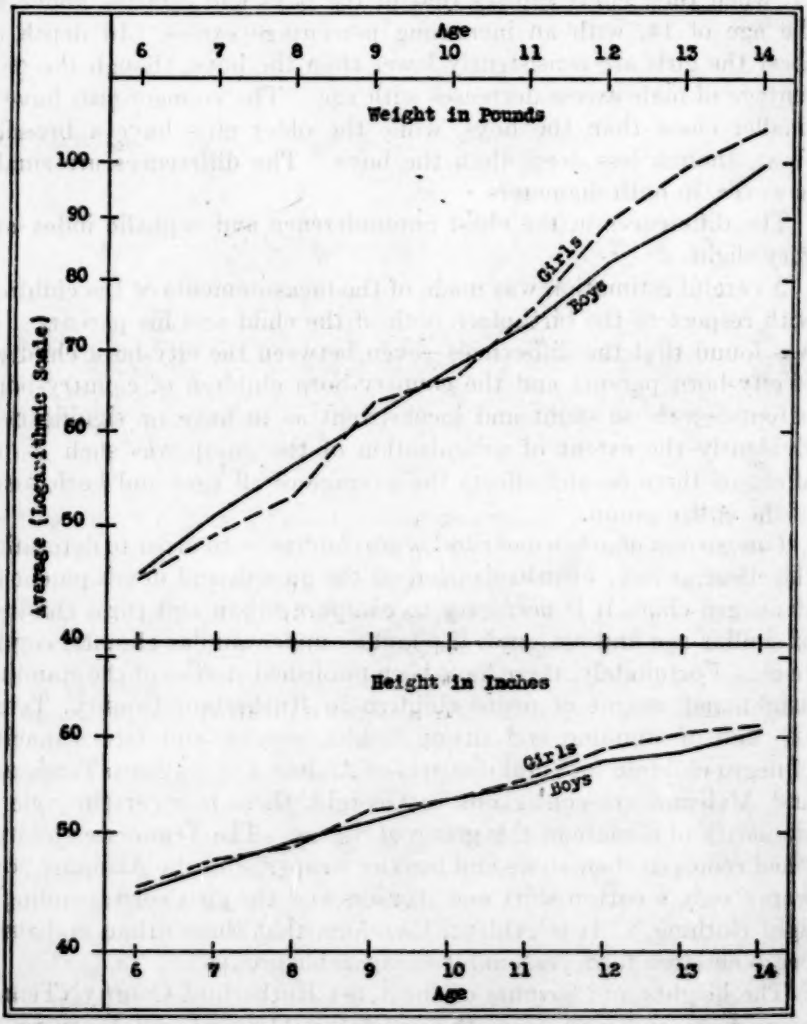

FIG. 2.—Average weights and heights of 1,384 Rutherford County (Tenn.) negro school children, by age and sex

The relationship between the heights and weights of the boys and girls is shown graphically in Figure 2. It will be seen that while the height curve of the girls is somewhat irregular, it is, in general, higher

than that of the boys, and continuously so after the age of 10. Among the city children, the height curve of the girls is consistently higher than that of the boys after a point between the 8th and 9th years. The differences in height are slight in both groups.

The weight curve of the rural girls tends to be somewhat irregular, but definitely crosses that of the boys between 10 and 11 years and remains higher throughout the period of study. It is seen, therefore, that the height and weight curves of urban and rural negro children in relation to age and sex within each group are similar in character.

A comparison of these urban and rural groups will indicate the difference (if any exists) between the growth and development of city and country negro children. In Table 4 the heights of the two groups are brought together for easy reference.

TABLE 4.—*Average standing height of urban and rural negro school children by age and sex*

	Age at nearest birthday								
	6	7	8	9	10	11	12	13	14
Boys:									
Urban [1]	44.95	46.28	48.85	50.61	52.80	54.46	56.85	58.51	60.25
Rural [2]	44.80	47.00	49.30	51.10	53.50	55.00	57.50	58.50	60.90
Girls:									
Urban [1]	44.46	46.33	48.71	51.05	53.31	55.55	57.92	60.01	61.52
Rural [2]	45.20	47.50	48.90	52.10	53.50	55.60	58.90	60.50	61.70

[1] U. S. Public Health Service.
[2] Mustard and Waring, American Journal of Public Health, October, 1926.

The differences in height between both boys and girls in the two groups are shown graphically in Figure 3. These differences are slight but are almost entirely in favor of the rural group. At 6 years of age the city boys have about one-tenth of an inch advantage, but from that time to the thirteenth year the country boys are taller than the city boys. At that age the two groups are practically the same height, but at 14 there is a slight indication that the country boys are again forging ahead.

Among the girls from 6 to 14 years, though the differences are slight, there is never a point where the curve for the rural girls is not slightly above that for the urban group. It is evident, therefore, that rural negro children of this group from 6 to 14 years of age, inclusive, are slightly taller than the urban children of Atlanta of the same age. The small group of negro children studied in rural Alabama (3)—less than 400 in number—shows, among the boys, a height curve similar to that of the urban negro boys; among the girls, the Alabama curve is similar to the rural Tennessee curve in the younger children but later tends to fall slightly below the urban curve. The number of children is small, and the irregularities of the curve would obscure

slight differences such as were noted in the Tennessee comparison even if there were such differences between Georgia and Alabama children.

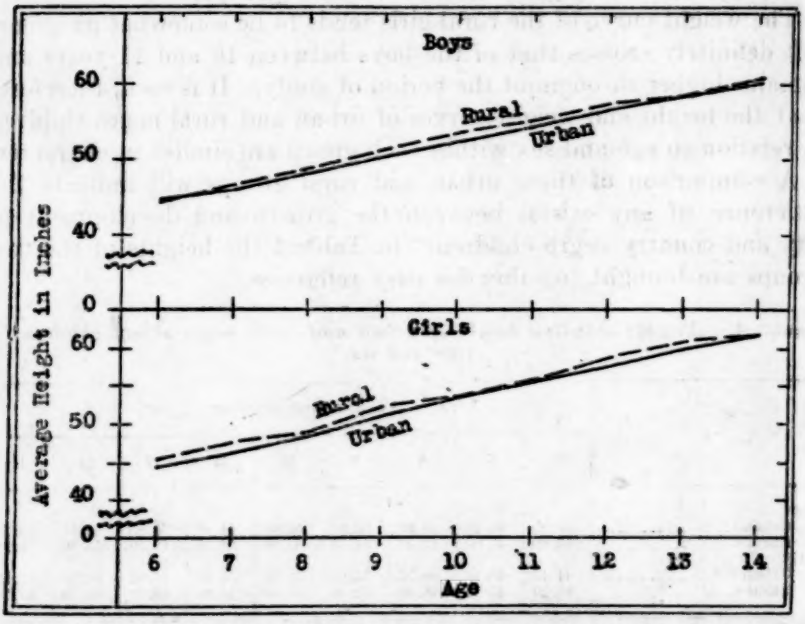

FIG. 3.—Heights of urban (Atlanta) and rural (Rutherford County, Tenn.) negro school children, by age and sex

TABLE 5.—*Average weights of urban and rural negro school children by age and sex*

	Age at nearest birthday								
	6	7	8	9	10	11	12	13	14
Boys:									
Urban [1]	45.01	47.79	53.04	58.59	65.58	70.72	78.63	86.90	94.82
Rural [2]	45.6	50.1	56.2	61.5	67.8	73.8	82.6	89.8	99.4
Girls:									
Urban [1]	42.24	46.40	51.98	58.57	64.70	72.99	83.44	93.45	103.17
Rural [2]	45.0	49.3	53.0	63.5	66.6	75.5	89.5	99.4	107.1

[1] U. S. Public Health Service.
[2] Mustard and Waring, American Journal of Public Health, October, 1926.

In Table 5 the average weights of the urban and rural boys and girls have been arranged for convenience of comparison. The differences between the two groups are shown graphically in Figure 4.

It is seen that at all ages and in both sexes the rural negro children are heavier than the urban negro children. There is a difference of only about half a pound between the boys at 6 years of age, but the difference rapidly increases, being almost four times as much at 7 years. The weight curve of the rural girls is somewhat irregular, but it is never as low as that of the urban girls, and at 6, 7, 9, 12, and

13 years the differences between the girls are greater than the differences between the boys. The figures representing these differences are given in Table 6.

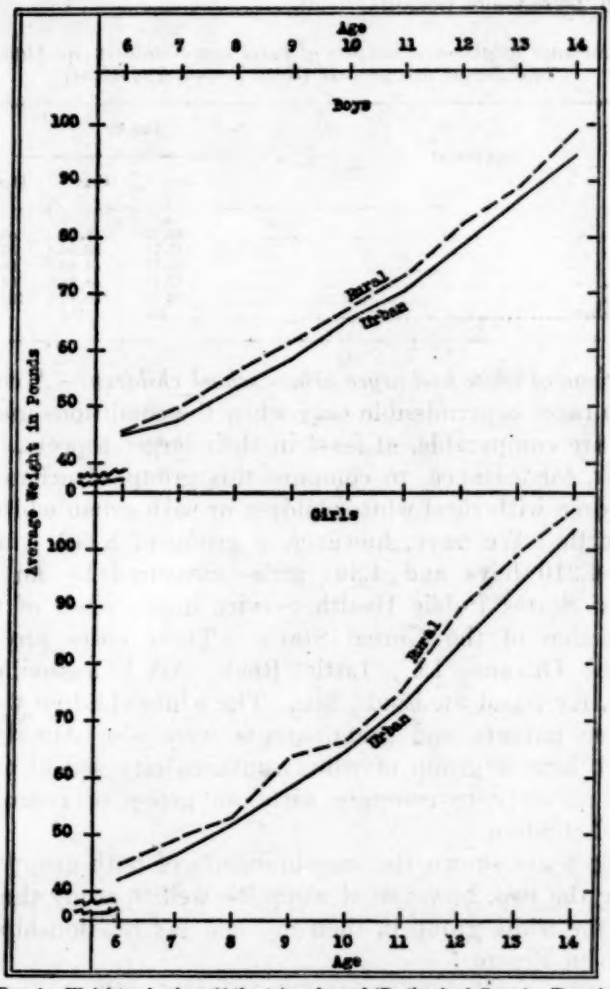

FIG. 4.—Weights of urban (Atlanta) and rural (Rutherford County, Tenn.) negro children, by age and sex

TABLE 6.—*Differences in weight and height between urban and rural negro school children*

Age	Excess, in pounds, of rural over urban		Excess, in inches, of rural over urban	
	Boys	Girls	Boys	Girls
6	0.59	2.76	[1] −0.15	0.74
7	2.31	2.90	.72	1.17
8	3.16	1.02	.45	.19
9	2.91	4.93	.49	1.05
10	2.22	1.90	.70	.19
11	3.08	2.51	.54	.05
12	3.97	6.06	.65	.98
13	2.90	5.95	[1] −.01	.49
14	4.58	3.93	.65	.18

[1] Minus sign indicates excess of urban over rural.

The heights and weights of the rural negro children in Alabama examined by Smillie and Augustine are shown in Table 7. These were not included in Table 5, because the Alabama children were grouped in 2-year-age periods.

TABLE 7.—*Average heights and weights of rural negro children in Alabama, by sex and 2-year age periods (Smillie and Augustine)*

Age period	Height		Weight	
	Boys	Girls	Boys	Girls
6 and 7	46.41	46.97	48.57	48.83
8 and 9	49.71	50.90	57.80	57.05
10 and 11	53.17	54.69	68.41	72.62
12 and 13	57.79	58.68	84.14	89.85
14 and 15	60.91	60.32	101.44	107.78
Number of children	168	213	164	215

Comparison of white and negro urban school children.—A comparison of the two races is permissible only when the conditions under which both live are comparable, at least in their larger aspects. It would not be fair, for instance, to compare this group of urban southern negro children with rural white children or with urban white children in the North. We have, however, a group of 8,601 white school children—4,210 boys and 4,391 girls—measured by an officer of the United States Public Health Service in six cities of the south central section of the United States. These cities are Houston, Tex.; New Orleans, La.; Little Rock, Ark.; Nashville, Tenn.; Louisville, Ky.; and St. Louis, Mo. The white children were native born whose parents and grandparents were also American born, so that we have a group of white southern city school children of American ancestry to compare with our group of negro southern city school children.

In Table 8 are shown the measurements of both groups. Before comparing the two, however, it would be well to study the measurements of the white group in their age and sex relationships. These are shown in Figure 5.

A glance at the height curves in Figure 5 will show that these southern white city boys are slightly taller than the girls until just a little beyond the age of 11. From this point the girls are slightly taller than the boys to 14 years, when the two curves meet. In the weight curves (shown in fig. 5) the girls are consistently lighter than the boys until between 10 and 11 years of age. A little before the age of 11 the girls begin to exceed the boys in weight and become increasingly heavier until the age of 13. After 13 the rate of increase in weight slackens and their curve begins to approach that of the boys.

A study of these curves shows that the growth relationships of the sexes in the two races are different.

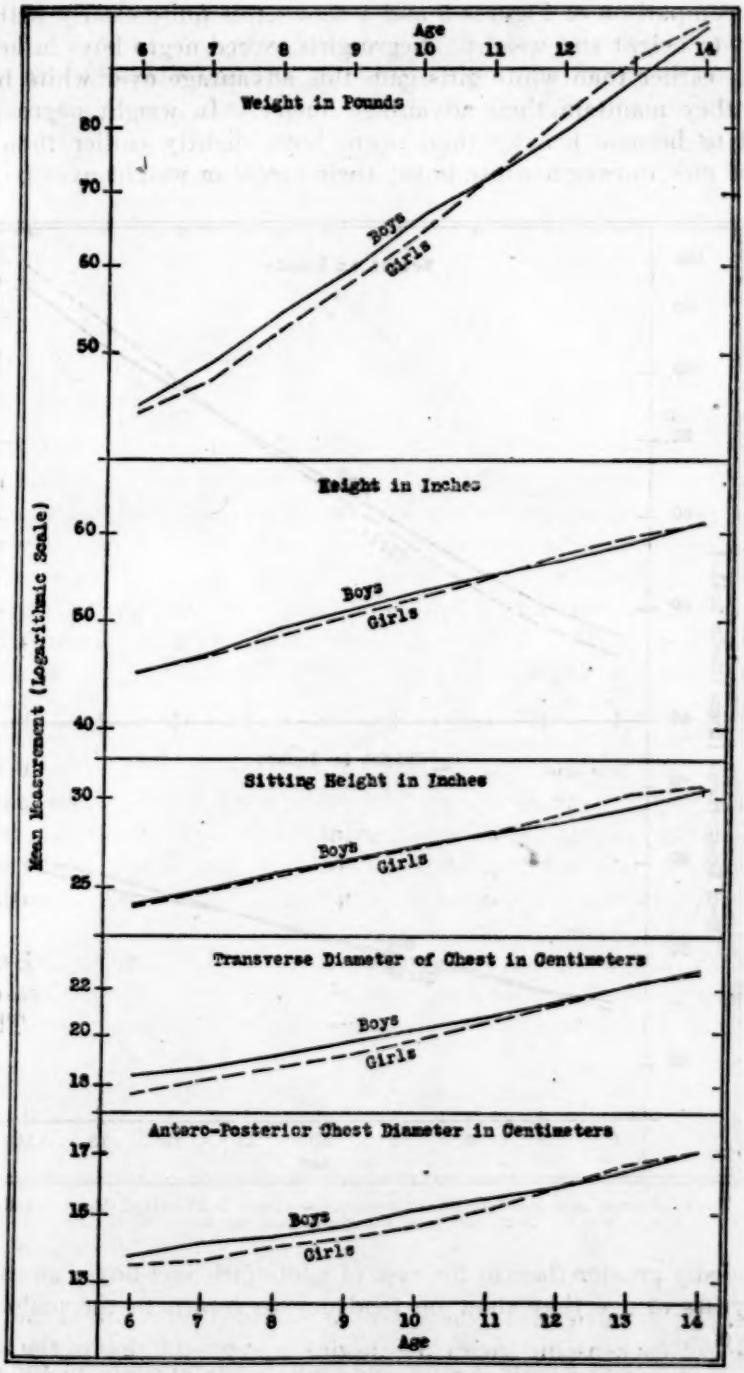

FIG. 5.—Physical measurements of white children in Houston, Tex., New Orleans, La. Little Rock, Ark., Nashville, Tenn., Louisville, Ky., and St. Louis, Mo.

A comparison of Figures 5 and 1 shows this quite clearly with respect to height and weight. Negro girls exceed negro boys in height much earlier than white girls gain this advantage over white boys, and they maintain their advantage longer. In weight negro girls tend to become heavier than negro boys slightly earlier than the white girls outweigh white boys; their excess in weight over boys is

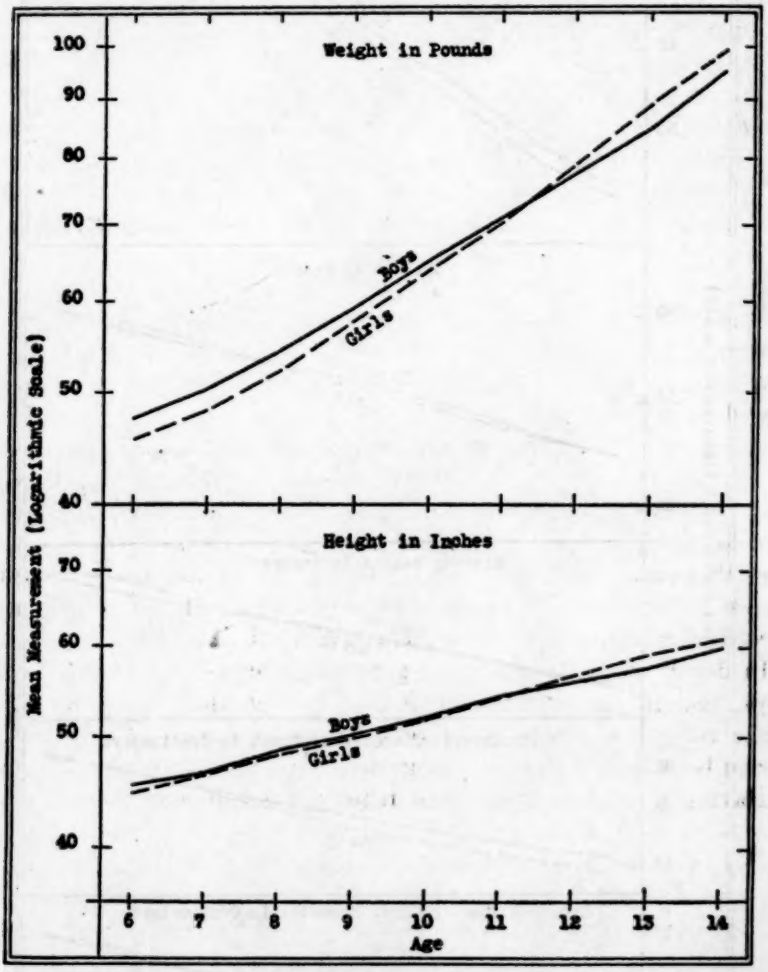

FIG. 6.—Average height and weight of native white children in Maryland, Virginia, and North and South Carolina, by age and sex

decidedly greater than in the case of white girls and boys; and up to 14 years of age they show no tendency to return to the male level of weight.

The curves in Figure 2 show the growth relationships of the sexes in rural negroes and tend to conform to the type of the Atlanta negroes. In Figure 6 are shown the average heights and weights of

another group of over 13,000 native white children in Maryland, Virginia, and North and South Carolina, taken from a previous study made by the United States Public Health Service (4). These children were distributed among various rural districts, small towns, and cities of moderate size in the States named. Hence, they are not strictly comparable even to the white group under consideration and are simply introduced as an aid to determine whether the differences in the growth curves of white and colored urban children are racial or sectional in character.

The curves in Figure 6 tend to conform to the type of the southern urban white children in the six cities studied. The weight curve of the city white girls farther south crosses that of the boys earlier than that of the white girls in the rural and small town group farther north. The apparent earlier maturity of the girls in both racial groups may be partly due to their more southern environment.

Figures 5 and 1 show the comparisons in sitting height and chest diameters of boys and girls in their own racial groups. In the matter of sitting height, the negro girls exceed the negro boys at about 9 years of age, while the curve of the white girls does not cross that of the white boys until between 10 and 11.

In breadth of chest the relationship of the sexes is quite different in the two races. At 11 years of age the curve of the negro girls crosses that of the negro boys and remains above it to the end of the period of study. Among the white children the chest of the boys is broader than that of the girls up to about the age of 13 and again is slightly above at 14, so that the white girls from 6 to 14 practically never exceed white boys of the same age in breadth of chest.

In depth of chest the negro girls never equal that of the negro boys, though the disparity is less with increasing age; but in the white race, the girls have a very slightly deeper chest in the age period between 12 and 14, though less deep from 6 to 12.

Having shown the differences in sex relationships in growth within the races, it remains to compare the two races directly. In Table 8 the average measurements of the white and negro children have been brought together for comparison.

A comparison of the negro and white boys is shown graphically in Figure 7.

At 6 years of age the negro and white boys are practically the same height. From that age up to 14 (except at 12 years, when their height curves are again at practically the same level) the white boys are slightly taller than the negro boys. The average difference in favor of the white boys in the age group 7 to 12 is about one-half inch. At 14, however, the white boys are 1 inch taller than the colored boys.

TABLE 8.—*Average measurements of negro school children in Atlanta, Ga., and white school children in certain cities*[1] *in the south central section of the United States, by age and sex*

	Age at nearest birthday								
	6	7	8	9	10	11	12	13	14
Weight (pounds)									
Boys:									
White	44.75	48.98	54.22	59.59	66.52	72.23	79.58	88.23	98.45
Negro	45.01	47.79	53.04	58.59	65.58	70.72	78.63	86.90	94.82
Girls:									
White	44.00	47.21	52.55	58.06	64.71	72.84	82.28	92.25	99.70
Negro	42.24	46.40	51.98	58.57	64.70	72.99	83.44	93.45	103.17
Standing height (inches)									
Boys:									
White	44.97	46.83	49.11	51.15	53.11	55.05	56.83	58.92	61.27
Negro	44.95	46.28	48.85	50.61	52.80	54.46	56.85	58.51	60.25
Girls:									
White	44.85	46.51	48.64	50.74	52.78	54.92	57.49	59.77	61.22
Negro	44.46	46.33	48.71	51.05	53.31	55.55	57.92	60.01	61.52
Chest circumference (inches)									
Boys:									
White	22.02	22.48	23.14	23.72	24.49	25.13	25.94	26.85	27.94
Negro	21.85	22.23	23.07	23.57	24.46	25.01	25.77	26.54	27.41
Girls:									
White	21.43	21.91	22.55	23.25	24.07	25.03	26.10	27.16	27.81
Negro	21.18	21.93	22.80	23.40	24.23	24.91	25.81	26.65	27.34
Transverse chest diameter (centimeters)									
Boys:									
White	18.31	18.67	19.18	19.68	20.26	20.77	21.41	22.12	22.84
Negro	18.77	19.16	19.74	20.40	20.95	21.53	22.27	22.93	23.66
Girls:									
White	17.74	18.13	18.68	19.21	19.83	20.53	21.34	22.13	22.68
Negro	18.22	18.73	19.43	20.13	20.86	21.51	22.54	23.40	24.24
Antero-posterior chest diameter (centimeters)									
Boys:									
White	13.78	14.11	14.32	14.74	15.20	15.56	15.94	16.47	17.16
Negro	14.27	14.48	14.81	15.13	15.57	15.89	16.36	16.88	17.33
Girls:									
White	13.46	13.64	14.00	14.33	14.77	15.25	15.93	16.61	17.05
Negro	13.64	13.91	14.31	14.76	15.11	15.55	16.19	16.68	17.08

[1] Houston, Tex.; New Orleans, La.; Little Rock, Ark.; Nashville, Tenn.; Louisville, Ky.; and St. Louis, Mo.

In the matter of weight the colored boy of 6 is one-fourth of a pound heavier than the white boy of the same age. But the advantage is short lived. At 7 the white boy is more than a pound the heavier, and from 7 to 13, inclusive, the average difference in favor of the white boy is 1.15 pounds. At 14 the difference has increased to 3.63 pounds.

In breadth and depth of chest, however, the negro boys have the advantage, though it is a very slight one. Taking the average difference for all the ages considered, the chest of the negro boy is about one-quarter of a centimeter broader than that of the white boy and about one-seventh of a centimeter deeper.

The curves of sitting height and chest circumference of the boys in the two races are almost identical. A comparison of these six measurements in the two races indicates that there is little difference

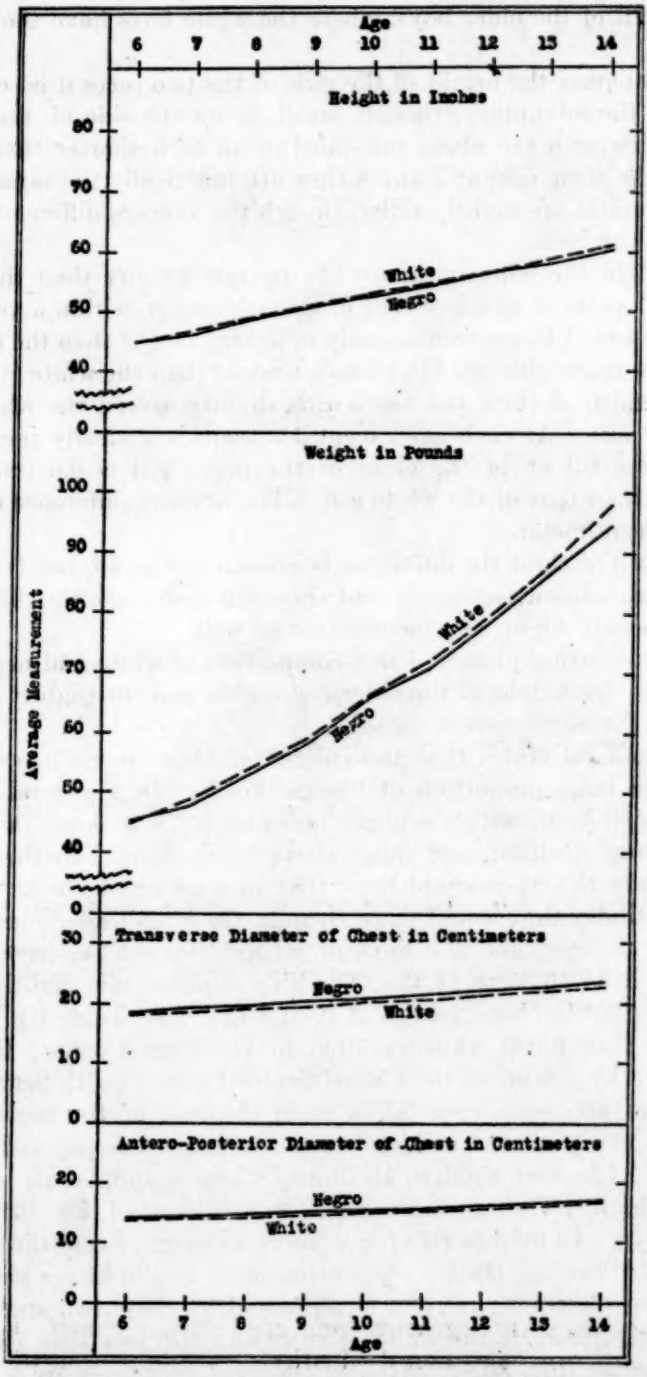

FIG. 7.—Average measurements of urban negro and white school boys, by age

in the size of negro and white southern city boys except in the height and weight of the older boys, where the white boys have the advantage.

In comparing the height of the girls of the two races it is seen that most of the advantage, though small, is on the side of the negro. Negro girls at 6 are about one-third of an inch shorter than white girls of the same age; at 7 and 8 they are practically the same height and thereafter are slightly taller, though the average difference is less than half an inch.

In weight the white girls are 1¾ pounds heavier than the negro girls at 6 years of age, lose half of this advantage within a year, and after the age of 11 are continuously of lighter weight than the negroes. At 14 the negro girls are 3½ pounds heavier than the white girls.

In breadth of chest the negro girls slightly exceed the white girls at every age. At each age except 11 there is a steady increase in this excess till at 14 the chest of the negro girl is 0.6 centimeter broader than that of the white girl. The average difference is about 0.4 of a centimeter.

In depth of chest the difference is exceedingly small, but favors the negro girl. In sitting height and chest circumference the differences are extremely slight, and inconsistent as well.

The interesting phases of this comparison of white and negro girls is the heavier weight of the older negro girls and the slightly broader chest of the negro girls of all ages.

Hrdlicka (5) states that the colored children in his investigation showed a large proportion of "long" heads. In a general way he classifies all heads with a cephalic index up to 75 as long, those from 75 to 80 as medium, and those above 80 as short. In the present study only the 14-year-old boys (184 in number) have an average cephalic index that would place them in the long-headed class. The girls at all ages, and the boys of all ages except 14, have indices varying from 76.25 to 77.43. The girls' indices are slightly higher than those of the boys, except at 10 and 11. (See Table 1.)

More than 6,000 white children in Du Page County, Ill., were examined by officers of the United States Public Health Service, and head measurements were taken as in the case of the negroes. Of these, 4,748 were the children of native-born parents, and of this number 1,723 were children all four of whose grandparents were also native born. The cephalic index was calculated for the groups separately. In neither group was there an average cephalic index as low as 75, and so Hrdlicka's conclusion as to the larger proportion of long heads among negroes is supported by these two studies. In no age group among the whites is there an index less than 78.58, and none greater than 80.94. Half of the average indices are a fraction over 80, but since none reaches 81, and half are below 80, one might

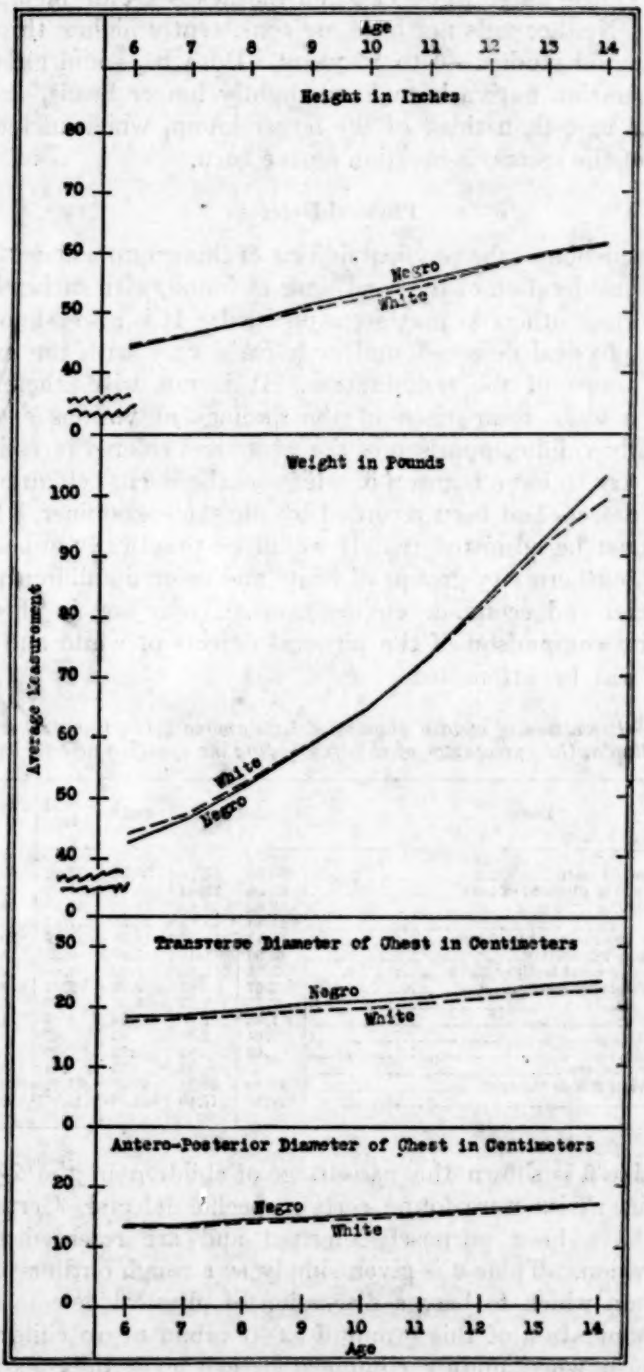

FIG. 8.—Average measurements of urban negro and white school girls, by age

say that among these white children the heads are of medium proportions. Neither girls nor boys are consistently higher throughout the age period studied—6 to 15 years. Both boys and girls of the third generation native born have slightly longer heads, except at 7 years of age, than those of the larger group, which includes also children of the second generation native born.

Physical Defects

The discussion of the physical defects of this group will consist simply of a consideration of the conditions as found, with such references to the work of others as may seem justified. It is a well-known fact that the physical defects found in a child vary with the examiner and the scope of the examination. It is not wise, therefore, to attempt a close comparison of the findings of various examiners. For a really valid comparison of the white and colored races it would be necessary to have a group of white southern city children whose physical defects had been recorded by the same examiner. In addition it must be admitted that it would be practically impossible to find two southern city groups of white and colored children with the same social and economic environment. Therefore, in this study, no definite comparison of the physical defects of white and colored children will be attempted.

TABLE 9.—*Prevalence of certain physical defects among 5,170 negro school children in Atlanta, Ga.; percentage of children having the specified defects, by age*

Defect	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
1 or more decayed teeth	68.35	67.29	76.32	72.23	60.13	60.28
Tonsils enlarged or diseased or both	32.56	32.44	32.44	34.39	32.33	28.57
Conjunctivitis	15.80	10.62	14.36	14.75	19.77	21.33
Adenoids	14.85	13.65	16.38	17.87	13.61	8.05
Vision 8/10 or less in one or both eyes	18.43	16.50	19.08	17.62	20.05	18.15
Thyroid enlarged definitely	3.56	1.17	1.30	2.22	5.83	11.27
Gingivitis or abscessed teeth or gums	2.81	1.05	1.95	4.08	3.40	3.02
Pitted or hypoplastic teeth	2.67	1.05	2.92	2.52	3.89	2.21
Skin defects	2.57	1.87	3.08	2.89	2.50	1.81
Heart defects	1.33	1.05	1.14	1.63	1.38	1.41
Speech defects	.64	1.40	.65	.52	.32	.40
Strabismus	.62	.82	.73	.59	.49	.40
Ties, mannerisms, etc	.27	.23	.32	.44	.16	------
Anterior cervical glands enlarged	40.48	46.21	46.39	41.66	34.68	27.16
Foot defects	17.82	17.99	14.78	15.97	20.38	22.71

In Table 9 is shown the percentage of children in the 2-year-age groups in whom were found certain specific defects. Certain other defects have been purposely omitted and are reserved for later consideration. Table 9 is given simply as a rough outline or framework upon which to base a discussion of physical defects as found upon examination of this group of 5,000 urban negro children. No table, even when unduly complicated, can ever fully express the meaning of a physical examination. The discussion which follows

the table is more revealing. Only an analysis which includes data less adaptable to tabular representation will give a true picture of the physical status of any group.

Emerson (6) states that "an adequate examination of physical growth should show an average of from four to six physical defects per child." In this group the average, when the slight and unimportant defects are included, is 5.9. The average is slightly less than 2 when only the more important defects (exclusive of signs of old rickets) are considered. The differences between the sexes are slight, and the averages are similar in the younger ages. In the older age groups the average of the boys falls slightly, while that of the girls rises slightly. In the case of all defects and of the more important defects in the combined sexes, the lowest average is found in the youngest age group (6 and 7). This, of course, is not true in the case of many of the specific defects.

Though it is difficult to compare the defects in this group with those in the group examined by Bivings (7), owing to differences in recording abnormalities, it seems that the city negro children are more defective than Bivings's rural group. This is in accord with his observations.

DENTAL DEFECTS

Among the more than 5,000 children examined, only 75 had had any teeth filled. The number is too small to have any significant effect on the statistical relations of the various groups. Had the number been significant their omission would not have been permissible, since it would have introduced into the group the element of selection.

TABLE 10.—*Percentage of 5,079 negro school children in Atlanta, Ga., etirely free from dental caries, by age and sex*

	Per cent free from dental caries					
	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
Both sexes	31.60	32.78	23.66	27.48	39.90	40.17
Boys	29.14	30.53	20.93	24.02	37.22	44.32
Girls	33.79	34.95	26.13	30.71	42.34	37.54

Thirty-one per cent of the children were entirely free from dental caries. The age and sex distribution of this group is shown in Table 10 and Figure 9. The graph brings out clearly the fact that more girls have perfect teeth than boys up to between 13 and 14 years of age, after which the boys are in excess. The smallest percentage of children with no dental caries falls in the 8 and 9 year group. After this age the percentage of boys having caries diminishes continuously throughout the period of study, while among the girls it de-

creases up to the 12 and 13 year group, after which there is an increase. The percentage of children free from dental caries in this negro group compares very favorably, according to various reports, with that among white children of the same economic status, and of even many of better social environment. The Atlanta negro children were also superior in this respect to a group of South Swaziland children belonging to one of the Bantu tribes of South Africa, among which only 25 per cent were free from dental caries (8). It is stated, with reference to these native children living in Kraals, that "the evidence favors the view that the antenatal and postnatal diets are responsible for the occurrence of caries to so marked an extent."

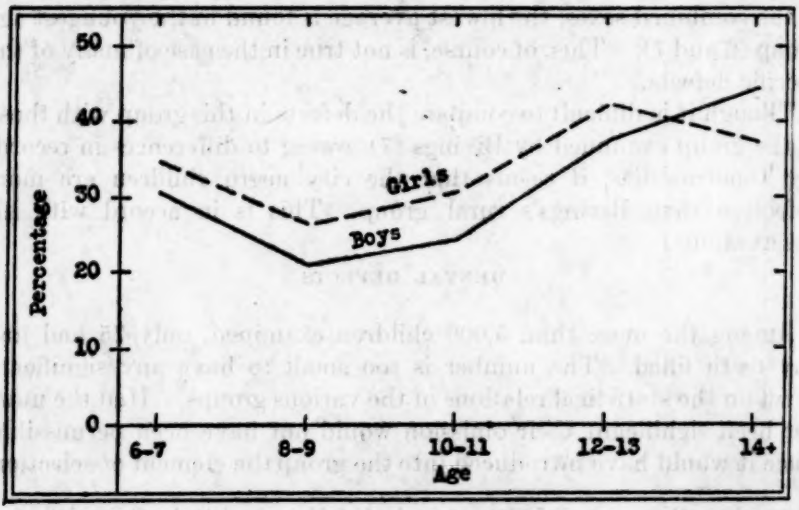

FIG. 9.—Children with teeth free from caries among negro school children in Atlanta, Ga., by age and sex

Attention should be called to the fact that of the 68 per cent of children with defective teeth, as noted in Table 9, in almost 33 per cent there were only one or two defective teeth present, and in some instances the amount of caries was very small. When these children with little decay, whose teeth may be called good, are added to the 31 per cent with no decay (excellent teeth), we have 64 per cent of the children with what may be called excellent or good teeth. About 35 per cent had three or more decayed teeth, and comprise the lower third with teeth which have been classified as "poor."

The general condition of the teeth of these children is shown by the figures in Table 11 and the curves in Figure 10.

TABLE 11.—*General condition of the teeth of 5,079 negro school children in Atlanta, Ga., by sex and age*

	Per cent					
	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
Good or excellent (None or 1 or 2 decayed)						
Total	64.56	57.31	50.04	64.91	78.56	78.00
Boys	60.91	55.76	46.02	59.43	75.13	80.00
Girls	67.81	58.79	53.67	70.01	81.67	76.79
Poor (3 or more decayed)						
Total	35.44	42.68	49.95	35.09	21.44	21.96
Boys	39.08	44.23	53.97	40.56	24.86	20.00
Girls	32.19	41.20	46.32	29.98	18.32	23.21

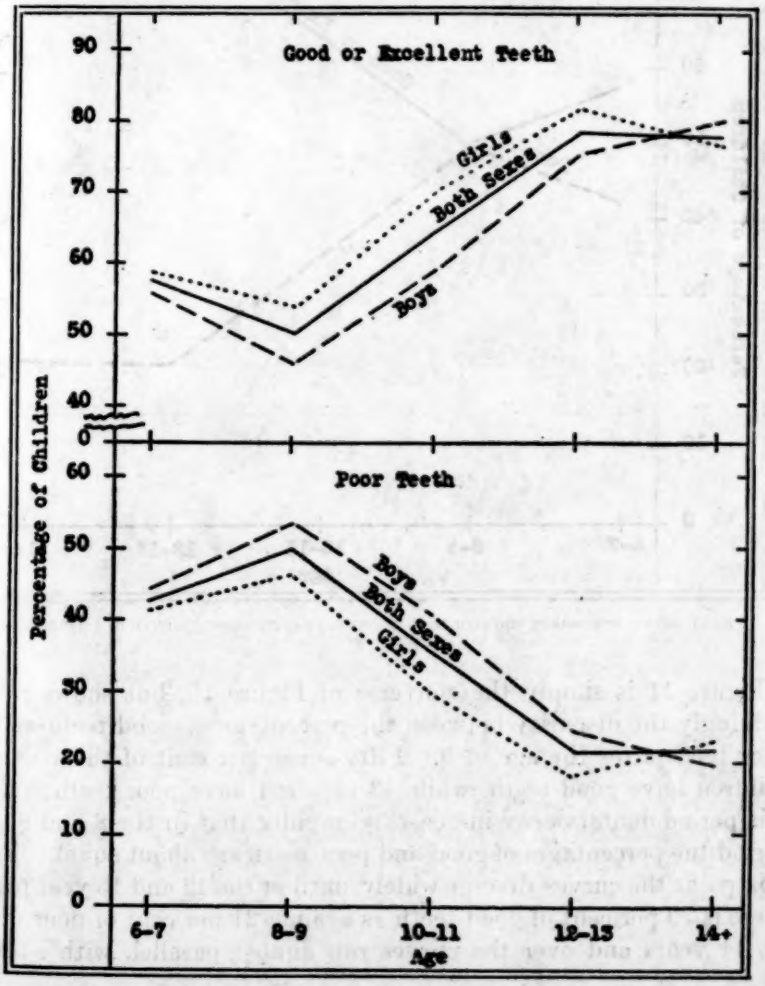

FIG. 10.—Condition of the teeth of 5,079 negro school children in Atlanta, Ga., by age and sex

It will be noted that the curves in Figure 10 (when the number with only one or two decayed teeth is added to the number of those entirely free from caries) are of the same general character as those in which only the caries-free children are included. There are slight differences in the relationship between the boys and girls. In the combined group the girls have the advantage over the boys at the youngest age period, which becomes greater during the three succeeding periods, begins to decrease in the 12 and 13 age period, and becomes a disadvantage at the oldest period.

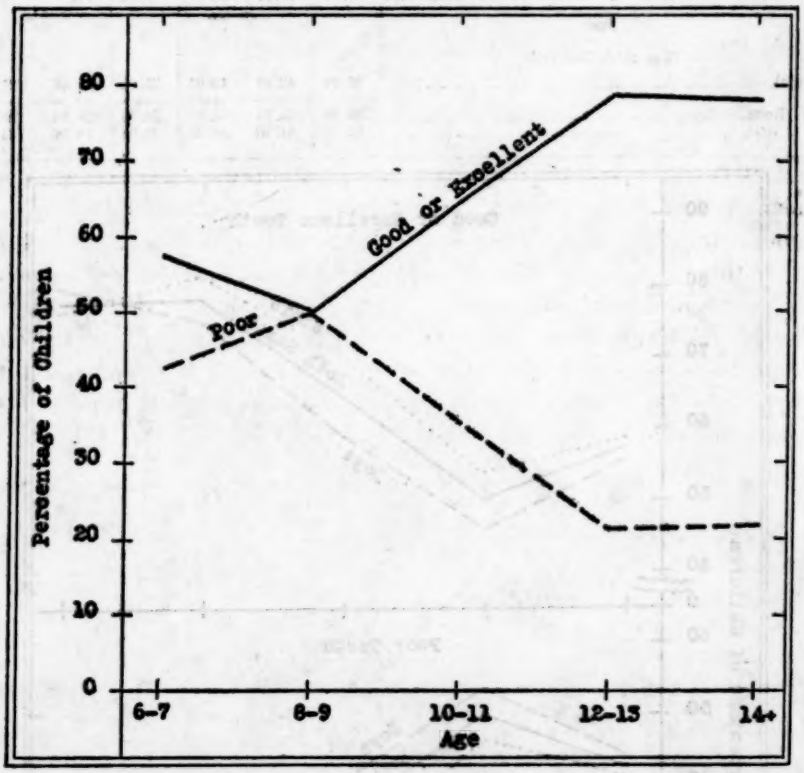

FIG. 11.—Good or excellent and poor teeth among 5,079 negro schoo lchildren in Atlanta, Ga., by age

Figure 11 is simply the converse of Figure 10, but shows rather strikingly the disparity between the percentage of good teeth and of poor teeth after the age of 9. Fifty-seven per cent of the youngest children have good teeth, while 43 per cent have poor teeth. After this period dental decay increases so rapidly that in the 8 and 9 year period the percentages of good and poor teeth are about equal. From this point the curves diverge widely until at the 12 and 13 year period there is 79 per cent of good teeth as against 21 per cent of poor teeth. At 14 years and over the curves run almost parallel, with a slight

tendency to converge. The temporary teeth evidently have a greater tendency to decay than the permanent teeth.

Almost 3 per cent of the children had gingivitis or abscessed teeth or gums. These conditions appear to be most prevalent in the 10 and 11 year age group and decrease thereafter. Pitted or hypoplastic teeth were found in about 2½ per cent of the children, the least among the youngest children, as would be expected, since hypoplasia of the teeth is less often seen in the temporary set (9).

DEFECTIVE TONSILS AND ADENOIDS

Almost one-third (32.56 per cent) of these negro children had tonsils which were considerably enlarged or diseased or both. After the age of 10 or 11 there is a drop in the curve for both sexes combined until at 14 years and over there is almost 12 per cent less tonsillar defect than among the 6 and 7 year old children. The highest incidence occurs in the 10 and 11 year group of the combined sexes; but among the girls alone the curve reaches its highest point at a later age—the 12 and 13 year group. After this age defective tonsils decrease among the girls until at 14 and over they have almost reached the level of the boys. Girls of 8 and 9 have less defective tonsils than do boys of the same age, while at 6 and 7 they have slightly more, so that there does not seem to be any definite or consistent relationship of sex to defect of the tonsils.

TABLE 12.—*Prevalence of enlarged or diseased tonsils (or both) among 5,170 negro school children in Atlanta, Ga., by age and sex*

Tonsils considerably enlarged or diseased or both	Per cent					
	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
Total	32.56	32.44	32.44	34.39	32.33	28.57
Boys	31.63	31.18	34.42	34.46	27.23	27.83
Girls	33.39	33.63	30.65	34.33	36.92	29.04

A little over 4 per cent of the children had had their tonsils removed. Probably (in this group, at least) the removed tonsils were all defective; and if the number with removed tonsils be added to the number of those with tonsils in situ which are undeniably defective, we would have a total of over 36 per cent having defective tonsils.

In another group of the children there was a certain number with a slight enlargement of the tonsils; but since a slightly enlarged tonsil is by no means a necessarily defective tonsil, these have not been included in calculating the rates for defective tonsils. It is highly desirable that we avoid the tendency to classify any deviation from the normal in a tonsil, no matter how slight, as a defect.

Adenoid vegetations were found among these city negro children to the extent of 14.85 per cent for all ages and both sexes. The percentage rises from 13.65 at 6 and 7 years to 17.87 at 10 and 11 years, and then declines to 8.05 at 14 and over.

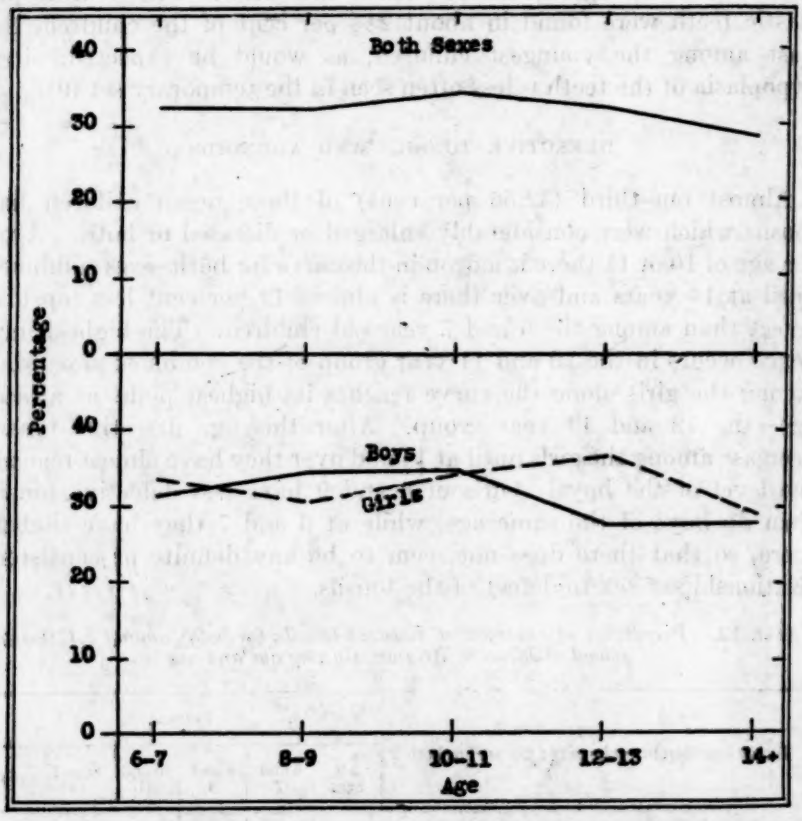

FIG. 12.—Prevalence of defective tonsils among 5,170 negro school children in Atlanta, Ga., by age

TABLE 13.—*Prevalence of adenoids among negro school children in Atlanta, Ga., by age and sex*

	Per cent					
	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
Total	14.85	13.65	16.38	17.87	13.61	8.05
Boys	20.53	18.23	21.98	25.68	17.81	11.34
Girls	9.80	9.32	11.30	10.34	9.85	5.94

It is interesting to note that adenoids are practically twice as prevalent among boys as among girls in this group, and that the decrease begins earlier in the case of girls—after the age of 9. While there seems to be no consistent sex relationship in the case of defective tonsils, the difference between the sexes in the case of adenoids is both consistent and marked. Figure 13 shows this relationship graphically.

VISION

It is seen from Table 9 that 18.43 per cent of the children had a visual acuity of 8/10 or less in one or both eyes as determined by the Snellen test. Since a visual acuity of 8/10 is only slightly below normal, a better picture of defective vision in this group is obtained through a consideration of a lesser degree of visual acuity. In Table 14 is shown also the percentage of children with a visual acuity of

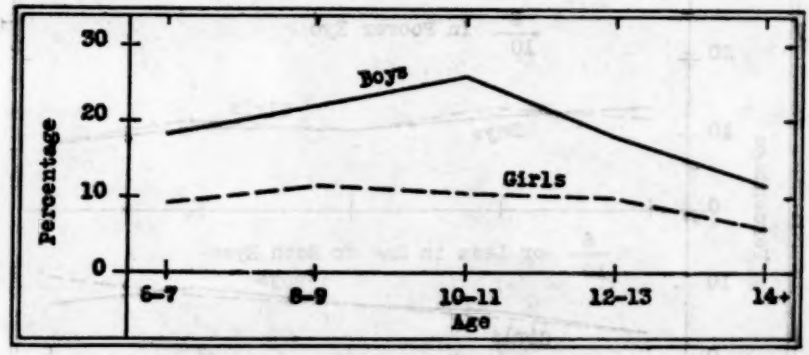

FIG. 13.—Prevalence of adenoids among negro school children in Atlanta, Ga., by age and sex

6/10 or less, 6/10 being a little lower than 20/30 in the more common nomenclature (20/30=30 feet distance; 6/10=32.8 feet distance). Practically 7 per cent of the children fell within the latter group.

TABLE 14.—*Defects in visual acuity among 5,062 negro school children in Atlanta, Ga.*

	Per cent					
	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
6/10 or less in one or both eyes						
Both sexes	6.99	3.78	6.11	7.12	8.80	9.48
Boys	6.85	3.63	6.25	7.17	9.14	7.22
Girls	7.12	3.92	5.98	7.08	8.50	10.93
8/10 in the poorer eye						
Both sexes	11.44	12.72	12.97	10.50	11.25	8.67
Boys	11.22	13.47	12.33	10.59	10.69	8.24
Girls	11.55	12.01	13.55	10.41	11.75	8.94

The group having 6/10 or less vision in one or both eyes includes, of course, all the more severe cases of visual defect. In this group is seen a marked increase with age. The percentage of children of all ages and both sexes with a Snellen reading of 6/10 or less in one or both eyes rose steadily from 3.78 at 6 and 7 years to 9.48 at 14 and over. In other words, there was found two and one-half times as much 6/10 or less vision at 14 and older ages as at 6 and 7 years of age. The only exception to the consistent rise with age was found in the case of boys in the oldest group, where the percentage was slightly less than in the next younger group. Neither boys nor girls were consistently better or worse at the different age periods. The increase in the defect, however, was greater in the girls than in the boys. While the 14 years and over group of boys had about twice as much 6/10 or less vision as the 6 and 7 years group, the oldest group

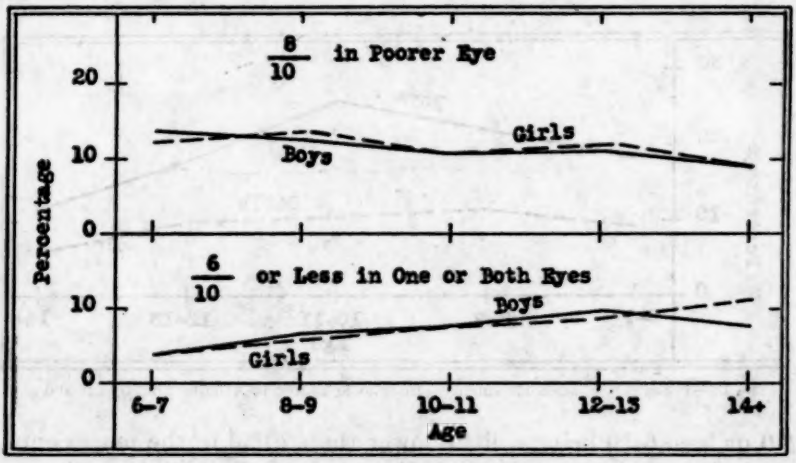

FIG. 14.—Visual acuity of 5,062 negro school children in Atlanta, Ga.

of girls had two and three-fourths times as much as the youngest group. There is no doubt that this increase of defective vision during school life needs further study.

The mild degree of defectiveness in visual acuity—8/10 in one or both eyes—shows, on the other hand, a tendency to decrease during school age (10). The amount of strabismus osberved was low, viz, 0.62 per cent for all ages and both sexes.

ENLARGED GLANDS

Anterior cervical.—There was a considerable percentage of the children with enlarged cervical glands, but there was little that was more than moderate in degree. After the age of seven the girls were less affected than the boys, though in the youngest and oldest groups the sexes were about equally affected. The prevalence of enlarge-

ment of the anterior cervical glands decreased 41 per cent from the youngest age group to the oldest.

Thyroid.—Since Georgia is in the area of low goiter incidence (11), the percentage found in this group, viz, 3.56, was about what one would expect. An enlargement of the thyroid gland sufficient to be considered a defect was almost nonexistent among the negro boys, but there was an appreciable amount among the girls. The percentage among the latter ranged from 1.82 at 6 and 7 years to 18.15 at 14 and over, with an incidence of 6.33 for all ages.

TABLE 15.—*Prevalence of enlarged thyroid gland among negro school children in Atlanta, Ga., by age and sex*

	Per cent					
	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14 and over
Total, both sexes	3.56	1.17	1.30	2.22	5.83	11.27
Boys	.45	.48	.68	-------	.68	.52
Girls	6.33	1.82	1.86	4.31	10.46	18.15

CONJUNCTIVITIS

Under this term has been tabulated the various forms of conjunctivitis, but probably the larger percentage by far corresponded to the follicular type described as folliculosis by Veldee (12). Contrary to Veldee's findings in white children, the curve of incidence in this negro group does not fall with increasing age, at least not through the elementary school age. Comparatively few of the negroes were more than 14 years old.

TABLE 16.—*Prevalence of conjunctivitis among negro school children in Atlanta, Ga., by age and sex*

	Per cent					
	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14 and over
Total, both sexes	15.80	10.62	14.36	14.75	19.77	21.33
Boys	16.22	9.11	17.04	14.55	20.38	22.16
Girls	15.43	12.06	11.92	14.94	19.23	20.70

It is seen that, when the group as a whole is considered, the percentage incidence increases steadily from 10.62 at 6 and 7 years to 21.33 at 14 and over. Among the boys the rise is broken by a fall in the 10 and 11 year group; among the girls there is practically no fall though a slight break occurs at 8 and 9 years after which the rise is continuous through the 14 year and over group.

FOOT DEFECTS

A special test for flat feet, by means of the Scholl pedograph, was made in the case of 4,478 of the children. In the use of this instrument the child steps with each foot in turn upon an inked diaphragm, leaving an impression of the weight-bearing foot on a sheet of white paper. The various degrees of depression of the arches were classified as first, second, and third degree flat foot, or slight, moderate, and severe flat foot.

TABLE 17.—*Percentage of flat foot among 4,478 negro school children in Atlanta, Ga., by age and sex*

	Per cent					
	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
All degrees of flat foot						
Both sexes	17.82	17.99	14.78	15.97	20.38	22.71
Boys	14.54	17.38	12.05	13.64	15.57	16.38
Girls	20.66	18.52	17.32	18.14	24.55	26.70
Slight degree of flat foot						
Both sexes	6.25	10.52	5.97	5.10	5.40	5.90
Boys	5.44	10.82	5.31	4.02	3.94	5.65
Girls	6.96	10.26	6.59	6.10	6.67	6.05
Moderate degree of flat foot						
Both sexes	8.73	6.71	7.44	8.28	10.45	11.35
Boys	7.17	5.90	5.92	7.52	7.88	9.60
Girls	10.08	7.41	8.85	8.99	12.68	12.46
Severe degree of flat foot						
Both sexes	2.84	.76	1.37	2.59	4.53	5.46
Boys	1.93	.66	.82	2.10	3.75	1.13
Girls	3.62	.85	1.88	3.05	5.20	8.19

It is seen that, when all degrees of flat foot are considered together, the condition increases after the age of 9. Moderate and severe flat foot both increase steadily from 6 to 14 years. On the other hand, slight degrees of flat foot, after a sharp drop from the youngest group to the next older, sinks a little lower at 10 and 11, and then rises very slightly through the two older groups. Moderate and severe flat foot combined rises from 7.47 in the 6 and 7 year group to 16.81 at 14 years and over.

The striking feature of the incidence of flat foot in this group is the preponderance of the defect among the girls. Even in the slight degree of flat foot, the amount among the girls of all ages is 27 per cent higher than that among the boys. In the moderate degree the excess rises to 40 per cent, and in severe flat foot the amount among the girls is 87 per cent higher than that among the boys.

SKIN DISEASES

The skin diseases observed among these negro school children were those most commonly seen among children of this age—scabies, impetigo, ringworm, and eczema. The number affected comprised

less than 3 per cent of the total number of children. Ringworm was more than twice as prevalent as the other three diseases combined, and was seen almost four times as frequently as any other single skin disease.

When all of these skin diseases among the children of all ages are considered, there was twice as much among the boys as among the girls. In the case of impetigo alone (which was present in only 0.06 per cent of the children) does the amount among the girls exceed

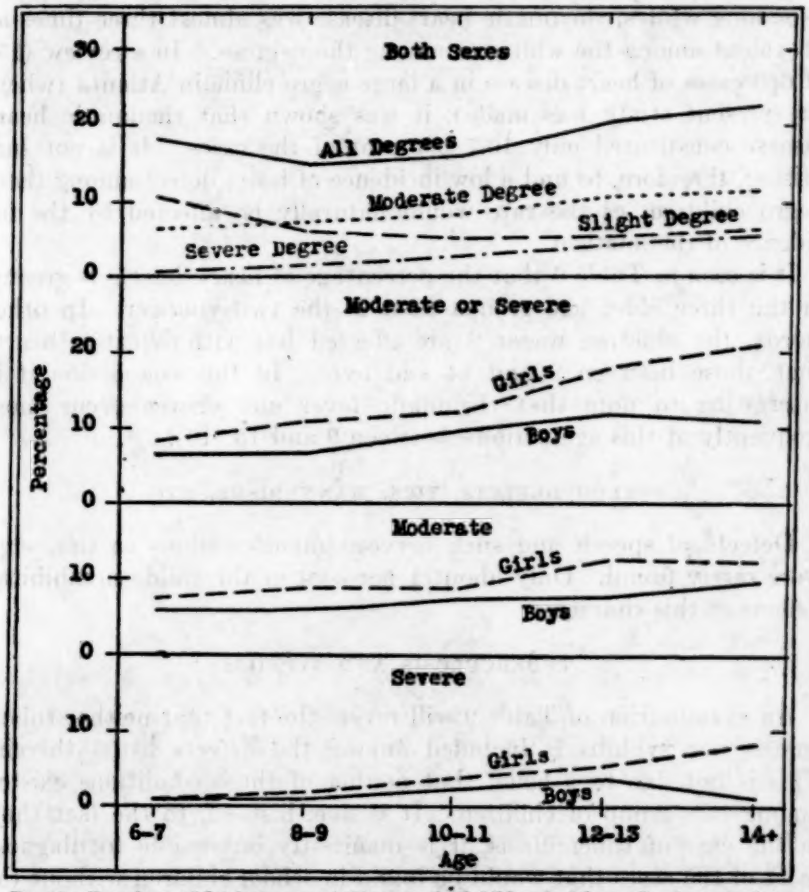

FIG. 15.—Prevalence of flat foot among 4,478 negro school children in Atlanta, Ga., by age and sex

that among the boys. The latter have four times as much eczema as the girls, twice as much ringworm, and twice as much scabies.

HEART DEFECTS

The number of heart defects as observed at a single examination without the aid of special methods seemed to be low in this particular group of children—less than 1½ per cent—when all abnor-

malities whether organic or functional except tachycardia are included. Girls are more affected than boys, except in the two younger groups.

It is generally held that much of the heart defect of childhood and youth is rheumatic in origin, and Harrison and Levine (13) have called attention to the rarity of rheumatic heart disease in the southern part of the United States. In the series of cases studied by Stone and Vanzant (14), in Texas, it was pointed out that, while heart disease from all causes was nearly twice as common among negroes as among whites, rheumatic heart disease was almost three times as prevalent among the whites as among the negroes. In a review (15) of 660 cases of heart disease in a large negro clinic in Atlanta (where the present study was made), it was shown that rheumatic heart disease constituted only 10.7 per cent of the cases. It is not surprising, therefore, to find a low incidence of heart defect among these negro children, as the rate would naturally be affected by the incidence of rheumatism.

It is seen in Table 9 that the percentage of heart defects is greater in the three older age groups than in the two younger. In other words, the children under 9 are affected less with defective hearts than those between 9 and 14 and over. In this connection it is interesting to note that rheumatic fever and chorea occur most frequently at this age period—between 9 and 15 (16).

SPEECH DEFECTS, TICS, MANNERISMS, ETC.

Defects of speech and such nervous manifestations as tics, etc., were rarely found. Only about 1 per cent of the children exhibited defects of this character.

TUBERCULOSIS AND SYPHILIS

An examination of Table 9 will reveal the fact that neither tuberculosis nor syphilis is included among the defects listed therein. This is not due to a belief that neither of these conditions existed among this group of children. It is due, instead, to the fact that, in the case of tuberculosis, it is manifestly impossible to diagnose most of the cases that would be found in school children without the aid of such means as the tuberculin test, X-ray examinations, and a reliable history of contacts. Since these were not available, it is not believed that a tabulation of "suspects" would add much to our knowledge of the subject. Certainly it would lack the element of scientific accuracy, and any comparison based on such data would be misleading. This fact is being recognized everywhere by the best students of tuberculosis among school children.

In the case of syphilis, while many of the signs are in evidence, other cases might be revealed by the Wassermann test, and hence

such figures as would be obtained in an ordinary schoolroom examination would fall short of the truth. It has not been thought wise, therefore, to include any such figures.

RICKETS

A discussion of rickets in school children, except in rare instances, is simply a discussion of the residual effects of a disease in infancy or early childhood. It is commonly understood that the active process of rickets ceases in most cases at 2 or 2½ years of age, though it may be later in certain races, particularly negroes and Italians. Bloomberg (17) reports a case of active rickets in a French-Canadian boy of 6½ years. There is also "late rickets" to be considered, in which the condition develops in children from 6 to 12 years of age; but according to Holt (18) this is very unusual in this country. It is seen, therefore, that there is slight chance of finding active rickets among school children.

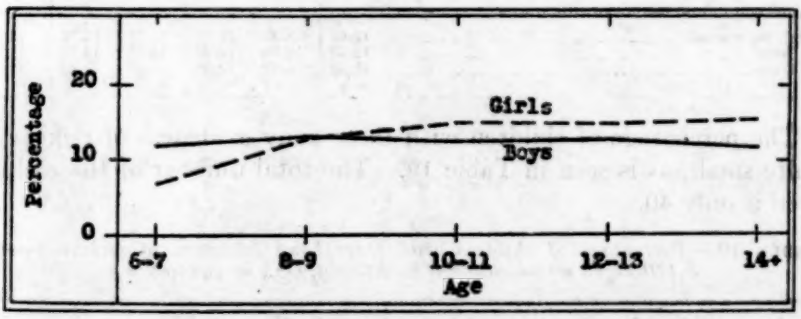

FIG. 16.—Percentage of children showing two bony evidences of rickets among 5,170 negro school children in Atlanta Ga., by age and sex

It is equally well known that most of the bony changes occurring in rickets tend to disappear with advancing age. Those remaining throughout the school age and beyond are usually those of higher degree, so that the amount of rachitic changes observed in any group of school children does not, by any means, indicate the actual past incidence of the disease in the group. The mild cases, practically all evidences of which have disappeared, would add materially to the rate. It does, however, give some indications of the prevalence of the disease in the special group investigated. It is of course evident that a study of preschool children would give a rate more nearly approaching that of infancy. In examinations of a group of British children (19) no child was considered rachitic unless at least two or three bony manifestations were present.

Since other conditions may produce changes seen in rickets, a single so-called evidence of rickets may not mean that the child has had the disease. Structural scoliosis, severe types of which may be

rachitic in origin, may result from other causes. Bowlegs, according to Barenberg and Bloomberg (20), are not necessarily due to rickets. Holt (18) states that it is doubtful whether pigeon breast depends upon rickets alone. Hypoplastic teeth may be due to malnutrition, infectious diseases, and diseases of the respiratory system (21), all acting before the child is 3½ years old, or possibly to infections due to digestive disturbances or to diseases affecting the epithelium (22).

In the present study of negro school children, 12.69 per cent of the group presented two bony evidences of rickets. The distribution of the children falling within this class is shown in Table 18 and graphically presented in Figure 16.

TABLE 18.—*Percentage of children showing two bony evidences of rickets among 5,170 negro school children in Atlanta, Ga., by age and sex*

	Per cent					
	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
Total, both sexes	12.69	9.33	12.65	13.71	13.53	13.68
Boys	12.32	11.99	12.95	12.25	12.33	11.34
Girls	13.02	6.82	12.38	15.09	14.62	15.18

The percentage of children with three bony evidences of rickets is quite small, as is seen in Table 19. The total number of these children is only 40.

TABLE 19.—*Percentage of children with three bony evidences of rickets among 5,170 negro school children in Atlanta, Ga., by age and sex*

	Per cent					
	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
Total, both sexes	0.77	0.70	0.73	0.67	0.81	1.21
Boys	.78	1.20	.51	.77	.68	1.03
Girls	.77	.23	.93	.57	.92	1.32

In the case of boys it is seen that there is little difference in the percentage of those showing two evidences of rickets throughout the age period 6 to 14 years and over. Among the girls, however, there are more than twice as many in the 14 and over age group as in the 6 and 7. It is seen, too, that after the age of 9 the curve of the girls is higher than that of the boys. If rickets attacks the sexes with equal frequency, as Holt believes, it would seem that the form which has affected the older girls was more severe than that which had attacked boys of the same period, and had left traces which disappear in the milder cases. The reverse seems to be true of the younger boys and girls. It would seem quite possible that the sexes are not always attacked with equal frequency.

It should be remembered that quite possibly, and even probably, many of the children with only one bony manifestation had really been affected with rickets in their early childhood. In this connection it is interesting to note that structural scoliosis appeared altogether (alone and in company with other rachitic defects) in 16.92 per cent of the children, and in 7.10 per cent as the only bony change indicating the past incidence of rickets. Knock-knee alone or accompanied by other bony changes appeared in 29.94 per cent of the group, and alone in 22.42 per cent. Generally speaking, both structural scoliosis and knock-knee occur more frequently in girls than in boys.

A striking feature in connection with the evidence of rickets in this group was the comparative mildness of the resulting deformities. The severe rachitic deformities formerly seen in urban negroes in Baltimore were in marked contrast to those seen in these Atlanta negro school children. Dr. J. H. Mason Knox, jr., states, however, that the type seen in Baltimore now is also milder in form. It would seem, therefore, either that rickets as a disease is growing milder in type, or that conditions favoring its development have been ameliorated with growing knowledge of its cause, prevention, and treatment.

INTELLIGENCE QUOTIENT AND PHYSICAL DEFECTS

Whether or not one believes that there is a relationship between physical defects and intelligence, it is interesting to note the distribution of physical defects according to intelligence quotient among nearly 800 of these negro children. This distribution is shown in Table 20.

TABLE 20.—*Distribution of physical defects in 782 negro school children in Atlanta, Ga., by intelligence quotient, age, and sex*

Intelligence quotient	Average number of the more important defects			Average number of all defects			Number of children		
	All ages	6-9	10 and over	All ages	6-9	10 and over	All ages	6-9	10 and over
Both sexes:									
Under 70	2.21	2.50	2.19	5.24	6.00	5.19	33	2	31
70-79	1.89	2.11	1.86	5.04	5.67	4.96	82	9	73
80-89	1.85	2.02	1.80	5.42	5.46	5.41	214	48	166
90-99	1.89	1.93	1.88	5.44	4.78	5.68	259	67	192
100-109	1.52	1.53	1.52	4.71	4.49	5.03	143	85	58
110 and over	1.75	1.75	1.73	4.96	4.85	5.36	51	40	11
Girls:									
Under 70	2.10	2.50	2.06	5.05	6.00	4.94	20	2	18
70-79	1.94	1.33	2.00	5.26	4.33	5.34	35	3	32
80-89	1.89	2.06	1.86	5.35	5.41	5.34	111	17	94
90-99	1.94	1.88	1.96	5.57	5.15	5.70	138	34	104
100-109	1.41	1.47	1.33	4.53	4.32	4.82	80	47	33
110 and over	1.67	1.65	1.71	4.79	4.73	5.00	33	26	7
Boys:									
Under 70	2.38	-------	2.38	5.54	-------	5.54	13	-------	13
70-79	1.85	2.50	1.76	4.87	6.33	4.66	47	6	41
80-89	1.80	2.00	1.71	5.50	5.48	5.50	103	31	72
90-99	1.83	1.97	1.77	5.31	4.39	5.65	121	33	88
100-109	1.67	1.61	1.76	4.95	4.71	5.32	63	38	25
110 and over	1.89	1.93	1.75	5.28	5.07	6.00	18	14	4

In this table it is seen that the more important physical defects are more numerous in the lowest intelligence group. This is true of all ages and both sexes. The boys and girls with the lowest intelligence quotients have the greatest number of the more important physical defects.

This does not hold good, however, when slight and less important defects are included, when it is found that in the case of children of all ages and both sexes the greatest number of all defects is found with an intelligence quotient of 90–99.

The smallest number of the more important physical defects was found, with only two exceptions, in the group having an intelligence quotient of 100–109. When all defects are considered, the fewest still occur most frequently in the 100–109 intelligence quotient group. In no instance were the fewest defects found in the highest intelligence quotient group.

Vital Capacity

In the case of the vital capacity of these children, as in that of other measurements, the size of the group warrants a study of the various features of this measurement as it occurs within the group. The determinations of vital capacity were made with a Sanborn wet spirometer, and practically all the records were obtained by the same person. The highest of three trials was taken as the child's record.

TABLE 21.—*Average vital capacity, in cubic centimeters, of negro children in Atlanta, Ga., by age and sex*

	Age at nearest birthday								
	6	7	8	9	10	11	12	13	14
Boys	945	1,001	1,140	1,290	1,428	1,567	1,759	1,891	2,064
Girls	878	962	1,077	1,226	1,379	1,534	1,717	1,951	2,131

The vital capacity of this group in relation to age and sex is shown in Table 21 and Figure 17. An interesting fact brought out by this data is in striking contrast to conditions existing among white children. Stiles and Graves (23), Wilson and Edwards (24), Stewart (25), Smillie and Augustine (26), Roberts and Crabtree (27), and unpublished data collected by the United States Public Health Service all show that the average vital capacity of boys is almost invariably higher than that of girls. In this group of negro children Figure 17 shows graphically that the curve for the girls crosses that for the boys between 12 and 13 years of age and remains higher through the 14-year period. In the study of Roberts and Crabtree (27) the vital capacity of the colored girls seems to be slightly higher at about 12 and 13, but after 13 is lower than that of the boys.

Smillie and Augustine (26) found that the negro girls in their group reached, and very slightly exceeded, the boys in the 8 and 9 year group, but were lower at other ages. Hence, it is apparent that though negro boys generally have a greater lung capacity than negro

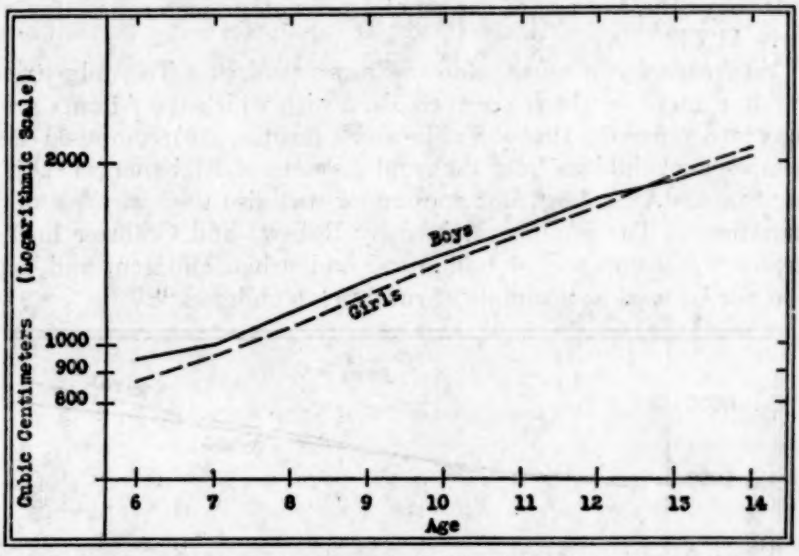

FIG. 17.—Average vital capacity of negro school children in Atlanta, Ga., by age and sex

girls, this is by no means so consistently true as in the case of white children.

It is seen from Figure 18 that the percentage of gain in vital capacity from year to year is generally greater in the girls than in the boys. Only at from 7 to 8 and from 11 to 12 years is the rate of

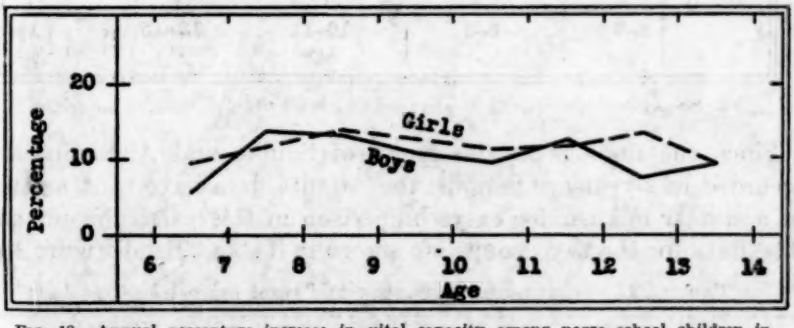

FIG. 18.—Annual percentage increase in vital capacity among negro school children in Atlanta, Ga.

increase less than that of the boys. In the case of the boys the greatest acceleration occurs at 7 to 8 years, after which there is a gradual slowing up until from 11 to 12 the percentage of gain again goes up. There is a rather marked fall at 12 to 13, with a slight rise at 13 to 14. The girls show a quite different curve. There is a steadily increasing

acceleration to its peak at 9 years, a slight decline through the next three years, with a second acceleration from 12 to 13 almost as great as that seen from 8 to 9. Between 13 and 14 the rate is practically the same as that for the boys.

In boys the average of the annual percentage increase is 10.27; in girls, 11.73.

Vital capacity in urban and rural negro children.—The only strictly rural group of southern negro children with which the Atlanta group may be compared is that of Smillie and Augustine (26), composed of 397 negro school children from the rural districts of Alabama, an adjoining State. A Sanborn wet spirometer was also used in these determinations. The group examined by Roberts and Crabtree in Tennessee was composed of both rural and urban children, and hence can not be used as a sample of rural negro children.

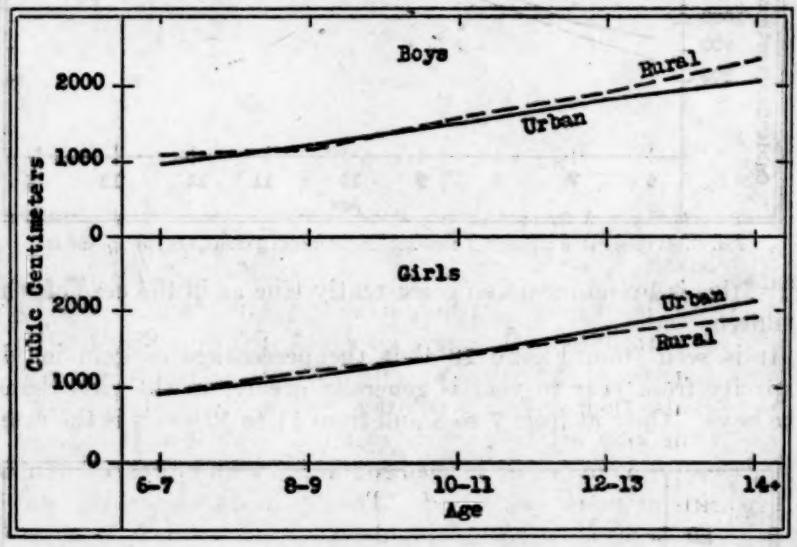

FIG. 19.—Average vital capacity of urban and rural negro school children, by age and sex

Since the findings in the group of Smillie and Augustine were recorded in 2-year-age periods, the Atlanta data have been arranged in a similar manner for easy comparison in this particular instance. The data for the two groups are shown in Table 22 and Figure 19.

TABLE 22.—*Vital capacity of urban and rural negro school children*

	Age at nearest birthday				
	6 and 7	8 and 9	10 and 11	12 and 13	14 and 15[1]
Boys:					
Urban [3]	984	1,219	1,499	1,815	2,064
Rural [2]	1,089	1,167	1,597	1,931	2,351
Girls:					
Urban [3]	935	1,153	1,460	1,818	2,131
Rural [2]	935	1,212	1,450	1,750	1,968

[1] U. S. Public Health Service group contains only 14-year-old children.
[2] U. S. Public Health Service. [3] Smillie and Augustine, J. A. M. A., Dec. 18, 1926.

The differences between the urban and rural children are brought out graphically in Figure 19. It is seen that it is only at the 8 and 9 year age period that the city negro boys have a greater vital capacity than the country negro boys. Even at this period the excess in favor of the city boys is only about 50 cubic centimeters—a little more than 4 per cent. At every other age period the rural boys have the advantage, the greatest excess—almost 14 per cent—being found at 14 and 15 years of age.

In the case of the girls the situation is almost reversed. It is only at the 8 and 9 year period that the rural girls have greater vital capacity than the urban girls. After that time the city girls exceed the country girls, their greatest excess, 8 per cent, occurring in the oldest group.

TABLE 23.—*Average of biennial percentage increases in vital capacity of negro school children*

	Boys	Girls
Rural	21.67	20.60
Urban	20.41	22.92

Vital capacity of negro and white urban children.—Records are available of the vital capacity of the group of southern white city children (in Houston, New Orleans, Little Rock, St. Louis, Louisville, and Nashville) whose physical measurements have already been compared with those of the negro group in Atlanta. Figure 20 shows the relationship of the vital capacity of these white urban boys and girls, and also their annual percentage increase in vital capacity.

As in the case of other white children, it is seen that the vital capacity of the boys in this urban southern group is greater than that of the girls at every age period. This is the characteristic relationship of the sexes among white children. We have seen that it is not characteristic of negro children.

The white girls show a greater percentage of annual increase from 7 to 8, 11 to 12, and 12 to 13 years of age and a slightly greater rate at 9 to 10 and 10 to 11. The greatest differences in the percentage of increase are in the age group 6 to 7, where the boys show the greater rate; 11 to 12, where the advantage is in favor of the girls; and at 13 to 14 where the boys had the greater rate. The average of the annual percentage increases for the boys is 12.04; for the girls 11.69. It will be recalled that these rates for the Atlanta negro children were as follows: Boys, 10.27; girls, 11.73. The white boys show a percentage of annual increase greater than that of the negro boys, while the rate of increase among the white girls is practically the same as that among the negro girls.

The vital capacity, in cubic centimeters, of the two groups of southern city children, negro and white, is shown in Table 24.

TABLE 24.—*Vital capacity of urban negro and white children*

	Age at nearest birthday								
	6	7	8	9	10	11	12	13	14
Boys:									
Urban negro [1]	945	1,001	1,140	1,290	1,428	1,567	1,759	1,891	2,064
Urban white [2]	1,060	1,220	1,380	1,560	1,730	1,910	2,100	2,320	2,630
Girls:									
Urban negro [1]	878	962	1,077	1,226	1,379	1,534	1,717	1,951	2,131
Urban white [2]	1,000	1,120	1,290	1,430	1,590	1,760	1,990	2,230	2,420

[1] Atlanta, Ga.
[2] Houston, Tex.; New Orleans, La.; Little Rock, Ark.; Nashville, Tenn.; Louisville, Ky.; and St. Louis, Mo.

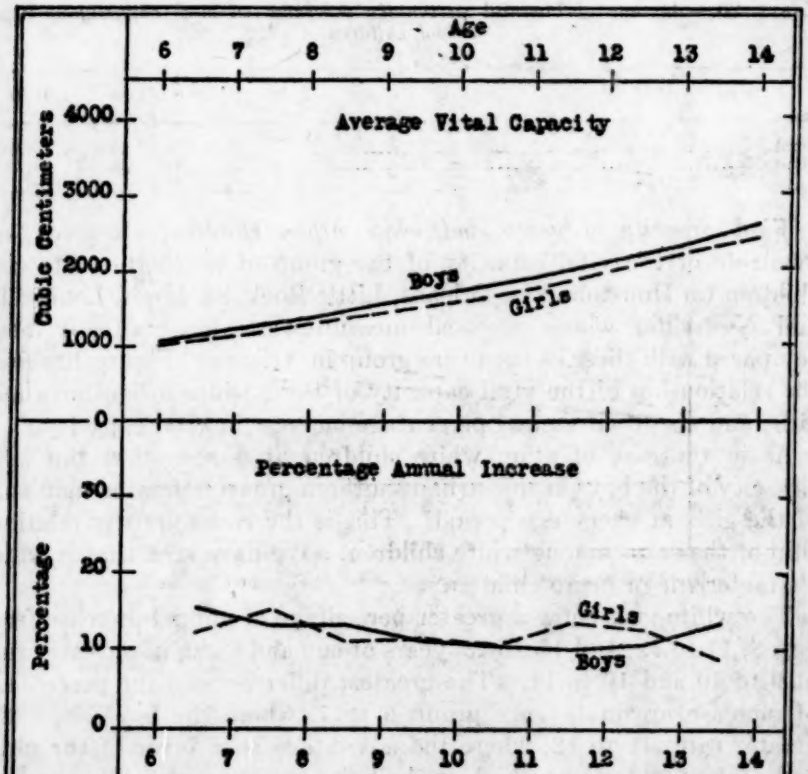

FIG. 20.—Vital capacity of white school children in Houston, Tex., New Orleans, La., Nashville, Tenn., Little Rock, Ark., Louisville, Ky., and St. Louis, Mo., by age and sex

A comparison of the vital capacity of the races is shown in Figure 21.

These data show plainly that in these two groups of southern city children the whites have a definitely greater vital capacity than the negroes. This is true of both sexes at all ages.

Among the boys the whites at 6 have a vital capacity 12 per cent greater than that of negroes of the same age. At 7 the difference in favor of the white boys has increased to almost 22 per cent. For several years the percentage difference does not vary much, but at 14 years the vital capacity of the whites is 27 per cent greater than that of the negroes. The average of the percentage differences from 6 to 14 is 21½.

The negro girls likewise have a lower vital capacity than the white girls. Except at 6 years of age, however, the differences between the negro and white girls are less than those between the negro and white boys. This is especially marked at 14 years, when the per-

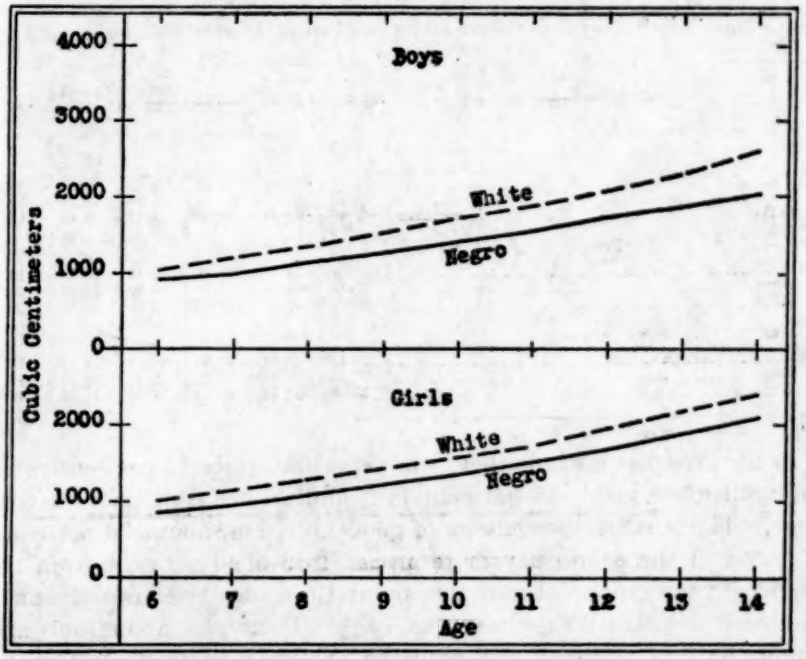

FIG. 21.—Vital capacity of urban negro and white school children, by age and sex

centage in favor of the white girls is only half as great as it is in the case of the white boys. At 6 years the vital capacity of the white girls is almost 14 per cent greater than that of the negro girls of the same age; at 14 years the difference is practically the same. At no age is the difference as much as 20 per cent, though at 8 years it almost reaches that point. The average of the percentage differences for the nine years from 6 to 14, inclusive, is a little more than 15.

Nutrition

The nutrition data presented in this report are based on clinical findings and are not an expression of height and weight relationship. They have not, therefore, the cut and dried exactness of height and

weight standards, but are rather the picture of the nutritional status of a large group viewed by the same examiner and appraised by the same judgment.

The children were rated as excellent, good, fair, poor, or very poor. To simplify the statistical handling of the material the five classifications are reduced to three by combining "excellent" and "good" into one class as "good nutrition," and "poor" and "very poor" into a class called "poor nutrition." The "fair" class, of course, remains as in the original classification.

The prevalence of the various grades of nutrition is shown in Table 25 and presented graphically in Figure 22.

TABLE 25.—*Nutrition of 5,162 negro school children in Atlanta, Ga., by sex and age*

Nutrition	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
Good or excellent						
Total	44.67	40.66	35.69	44.73	50.57	59.08
Boys	40.95	38.94	31.45	40.80	48.29	52.34
Girls	47.99	42.28	39.53	48.42	52.63	63.36
Fair						
Total	34.66	41.71	41.87	32.42	29.79	22.78
Boys	37.41	43.51	43.25	36.20	32.19	26.42
Girls	32.21	40.00	40.62	28.88	27.62	20.46
Poor or very poor						
Total	20.14	17.64	22.36	22.18	18.84	16.74
Boys	21.40	17.55	25.13	22.85	19.35	19.69
Girls	19.03	17.73	19.84	21.55	18.36	14.85

In the group as a whole there were approximately 45 per cent rated as excellent or good, 35 per cent fair, and 20 per cent poor or very poor. The smallest percentage of good nutrition, about 36 per cent, is found in the 8 and 9 year group, a drop of 9 per cent from the 6 and 7 year group. From this point the curve rises rapidly until it almost reaches 60 per cent at 14+. There are about one and one-half times as many well-nourished children in the oldest group as in the youngest, and almost one and three-fourths times as many as in the 8 and 9 year group.

The prevalence of poorly nourished children does not show such a wide variation with age. The largest amount of poor nutrition is found between 8 and 11 years, about 22 per cent, after which age period it decreases. There are almost as many poorly nourished children in the oldest group as in the youngest. It would seem that only a few of those who start out in the poorly nourished class ever succeed in rising above that class.

On the other hand, many of those who start out with fair nourishment apparently succeed in making the grade into the well-nourished class. This is indicated by the fact that, after the age of 9, there is a marked fall in the curve of fair nutrition coincident with a

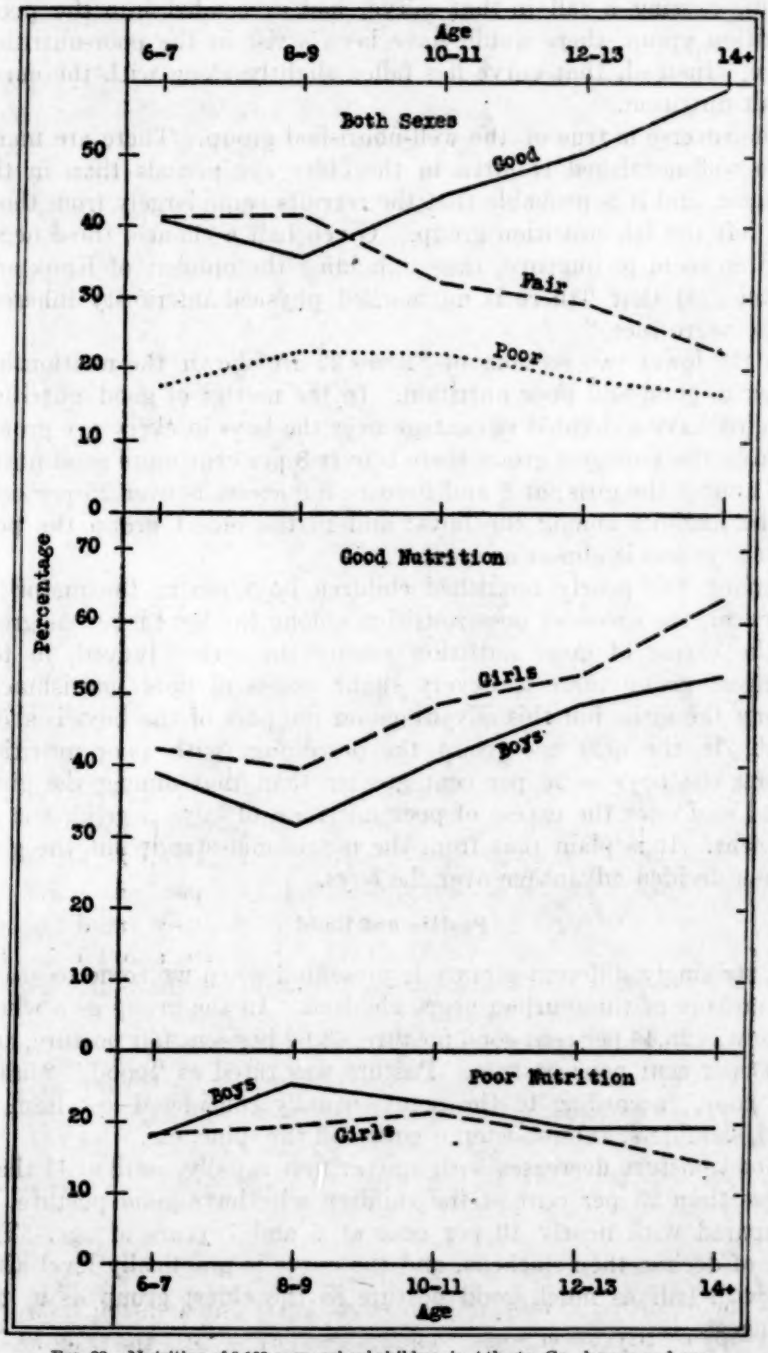

FIG. 22.—Nutrition of 5,162 negro school children in Atlanta, Ga., by age and sex

rise in that of good nutrition. If those who left the fair-nutrition group, causing a fall in that curve, had descended into the poor-nutrition group, there would have been a rise in the poor-nutrition curve. Instead, that curve has fallen slightly along with the curve of fair nutrition.

The reverse is true of the well-nourished group. There are many more well-nourished children in the older age periods than in the younger, and it is probable that the recruits came largely from those who left the fair-nutrition group. Given half a chance, these negro children seem to improve, thus upholding the opinion of Knox and Zentai (28) that "there is no marked physical inferiority inherent in the negro race."

In the lower two sections of Figure 22 are shown the relationship of sex to good and poor nutrition. In the matter of good nutrition the girls have a decided advantage over the boys in every age group. Even in the youngest group there is over 8 per cent more good nutrition among the girls; at 8 and 9 years the excess is over 25 per cent of the amount among the boys; and in the oldest group the percentage excess is almost as great.

Among the poorly nourished children boys are in the majority. However, the excess of poor nutrition among the boys is not as great as the excess of good nutrition among the girls. Indeed, in the youngest group there is a very slight excess of poor nourishment among the girls, but this advantage on the part of the boys is short lived. In the next age group the percentage with poor nutrition among the boys is 26 per cent greater than that among the girls. At 14 and over the excess of poor nutrition of boys over girls is 32 per cent. It is plain that from the nutritional standpoint the girls have a decided advantage over the boys.

Posture and Build

A strikingly different picture is presented when we come to study the posture of these urban negro children. In the group as a whole there was 26.45 per cent good posture, 43.62 per cent fair posture, and 29.93 per cent poor posture. Posture was rated as "good," "fair," or "poor," according to the points usually considered—position of head, shoulders, anteroposterior curves of the spine, etc.

Good posture decreases with age, at first rapidly, until at 11 there is less than 23 per cent of the children who have good posture, as compared with nearly 40 per cent at 6 and 7 years of age. The rate of decline then slackens, and the curve is practically level after 13, with half as much good posture in the oldest group as in the youngest.

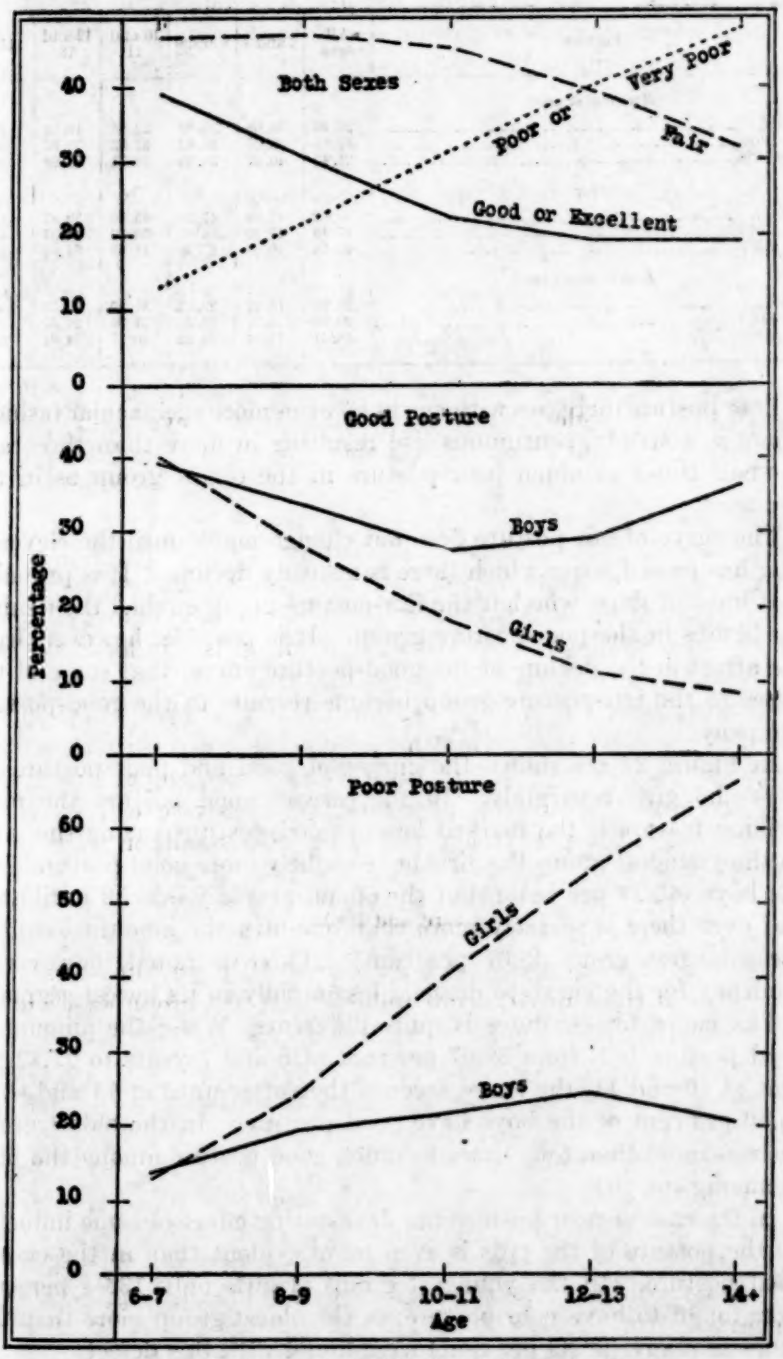

FIG. 23.—Posture of negro school children in Atlanta, Ga., by age and sex

TABLE 26.—*Posture of 5,119 negro school children in Atlanta, Ga., by sex and age*

Posture	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
Excellent or good						
Total	26.45	39.69	30.83	22.85	19.61	19.64
Boys	32.13	39.07	33.62	27.82	29.07	36.60
Girls	21.40	40.27	28.28	18.21	11.08	8.67
Fair						
Total	43.62	47.04	47.18	45.86	39.87	32.19
Boys	47.49	47.42	46.83	50.39	46.37	43.30
Girls	40.18	46.68	47.50	41.62	34.01	25.00
Poor or very poor						
Total	29.93	13.27	22.00	31.29	40.53	48.18
Boys	20.38	13.51	19.55	21.79	24.57	20.10
Girls	38.41	13.04	24.22	40.17	54.91	66.33

Poor posture increases with age in an even more spectacular fashion. There is a steady, continuous rise resulting in more than three and one-half times as much poor posture in the oldest group as in the youngest.

The curve of fair posture does not change much until the eleventh year has passed, after which there is a steady decline. It is probable that most of those who left the fair-posture group swelled the mounting figures in the poor-posture group. It is possible, however, from the arrest in the decline of the good-posture curve, that some of the losses to the fair-posture group became recruits to the good-posture company.

In Figure 23 are shown the curves of good and poor posture for boys and girls separately. In the case of good posture the most striking feature is the marked loss of good posture among the girls. In the youngest group the girls have slightly more good posture than the boys (40.27 per cent), but the amount rapidly falls off until at 14 and over there is scarcely more than one-fifth the amount found in the youngest group (8.67 per cent). There is noted, however, a tendency for the curve to descend less rapidly in its lowest segment.

The curve for the boys is quite different. While the amount of good posture falls from 39.07 per cent at 6 and 7 years to 27.82 per cent at 10 and 11, the curve ascends thereafter until at 14 and over, 36.60 per cent of the boys have good posture. In the oldest group there is more than four times as much good posture among the boys as among the girls.

In the case of poor posture the devastating effect of some influence on the posture of the girls is even more evident than in the case of good posture. In the youngest group of girls only 13.04 per cent were found to have poor posture; in the oldest group more than five times as many (66.33 per cent) were found with this defect.

The boys show no such striking change. Their curve of poor posture rises from 13.51 per cent at 6 and 7 years to 24.57 per cent

at 12 and 13, and then falls to 20.10 per cent at 14 and over. In the oldest group of children there is 3.3 times as much poor posture among girls as among boys.

Build.—The estimation of the build of these children was not based on measurements, but was determined by observation of each child who came up for examination. The results of these individual observations are shown in Table 27 and Figure 24.

TABLE 27.—*Build of 5,119 negro school children in Atlanta, Ga., by age and sex*

Build	All ages	6 and 7	8 and 9	10 and 11	12 and 13	14+
Slender or medium slender						
Total	36.63	38.15	43.50	39.06	31.50	23.08
Boys	38.31	37.59	46.14	40.34	32.53	26.80
Girls	35.13	38.67	41.09	37.86	30.58	20.67
Medium						
Total	56.48	60.55	54.54	56.91	57.10	51.62
Boys	57.53	60.93	52.32	57.03	61.59	55.67
Girls	55.54	60.18	56.56	56.79	53.04	49.00
Heavy or medium heavy						
Total	6.90	1.30	1.96	4.03	11.40	25.30
Boys	4.15	1.47	1.54	2.63	5.88	17.53
Girls	9.34	1.14	2.34	5.35	16.38	30.33

It is seen that the percentage of slender or medium slender children is more than five times as great as that of heavy or medium heavy children. Slenderness, however, reaches its peak at 8 and 9 years, and then falls from 43.50 per cent to 23.08 at 14 years and over, a decrease of almost 47 per cent.

There are more slender children among the boys than among the girls. This is true of all ages except the youngest group, and the peak of slenderness occurs at the same age period in both sexes—the 8 and 9 year group. From this point the amount of slenderness declines among both boys and girls, but the girls' loss is greater than that of the boys. At 14 and over, the girls have almost 50 per cent less slenderness than at 8 and 9 years of age; the boys' loss is nearly 42 per cent.

Heavy build increases with age in an even more spectacular manner than slenderness decreases. In the youngest group there is only 1.3 per cent of children with heavy build; in the oldest, one-fourth are heavy built. Except in the youngest group, more girls than boys are found to have heavy or medium heavy build. The increase with age in the case of the girls is much greater than in the case of the boys. At 14 and over, there are almost twelve times as many heavily built boys as at 6 and 7, while among the girls there are twenty-six times as many in the older group.

The children with medium build tend to decrease in number with age. Except at the 8 and 9 year age period there are more boys with medium build than girls.

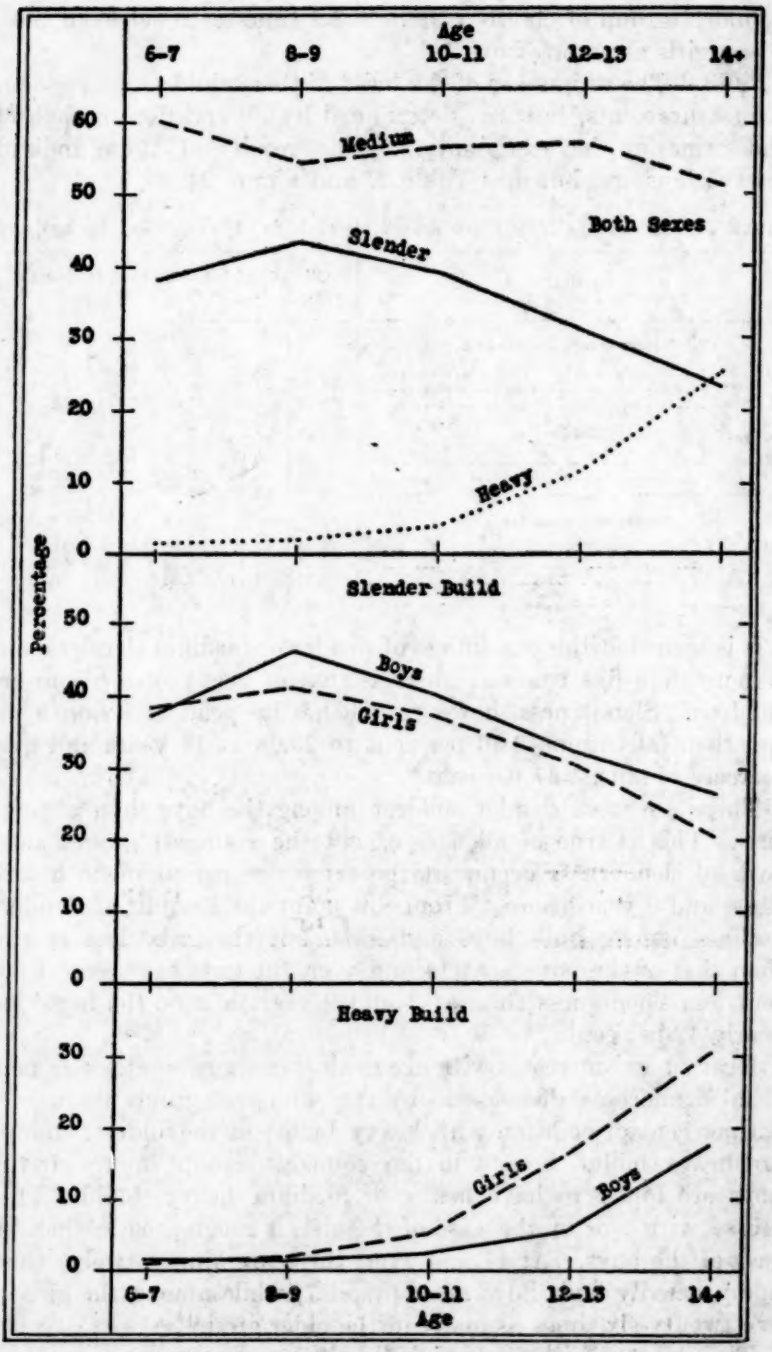

FIG. 24.—Build of 5,119 negro school children in Atlanta, Ga., by age and sex

The relationship of nutrition, posture, and build.—Is there any relation among nutrition, posture, and build, or between any two of these characteristics? Davenport (29, 30) considers nutrition a factor in body build, holding the view that many of the factors concerned in nutrition are the result of heredity. The age curves of good nutrition and of heavy or medium heavy build are of the same general character, as are also the curves of poor nutrition and slender build; but the relative positions of the former two curves are exactly reversed as compared with the latter two.[1] While the curve of good nutrition is on a much higher level than the curve of heavy build, the curve of poor nutrition is decidedly lower than the curve of slender build. The graphs, simply interpreted, show that the number of

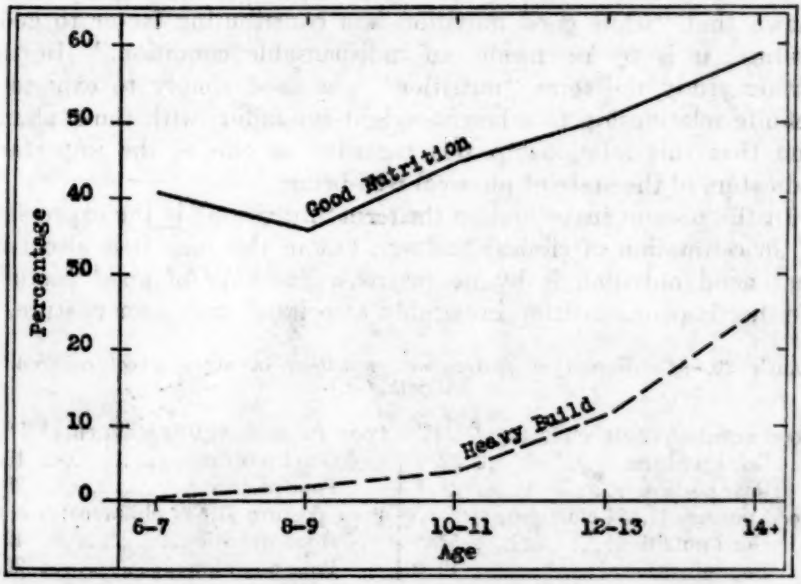

FIG. 25.—Nutrition and build of negro school children in Atlanta, Ga.

well-nourished children is much in excess of the number of those of heavy or medium heavy build, and that by no means all slender children are poorly nourished.

TABLE 28.—*Correlation of nutrition and build in negro school children in Atlanta, Ga.*

	Per cent		Per cent
Good nutrition (2,306 children):		Poor nutrition (1,040 children):	
Heavy build	13. 8	Heavy build	0. 1
Slender build	13. 6	Slender build	71. 9
Heavy build (353 children):		Slender build (1,875 children):	
Good nutrition	96. 6	Good nutrition	16. 7
Poor nutrition	.3	Poor nutrition	39. 6

[1] Figure 25 is incomplete and does not show the curves for poor nutrition and slender build. These curves, however, will appear in the reprint of this article.—ED.

In table 28 it is seen that over 96 per cent of the children of heavy build belong to the well-nourished group. Davenport uses the term "fleshy" to designate his heavy-build type and the name itself suggests good nutrition. In children fleshiness is a prominent characteristic of heavy build. However, nearly 17 per cent of the slender children were also well-nourished. In other words, while most of the heavily built children were in a state of good nutrition, many of the slender ones were also well nourished. In fact, in the good nutrition group there were about the same percentages of slender and heavy build children, the remainder of the group being made up of those of medium build.

Nutrition and posture.—In 1922 the writer published a study of the posture of over 1,100 white school children (31), in which it was shown that "while good nutrition is a contributing factor to good posture, it is by no means an indispensable condition." In the former study the term "nutrition" was used simply to express a definite relationship to a height-weight-age index, with the explanation that this relationship was regarded as one of the important indicators of the state of physical well-being.

In the present investigation the term "nutrition" is the expression of an estimation of clinical findings, but in this case it is also true that good nutrition is by no means a guaranty of good posture. Neither is poor nutrition invariably associated with poor posture.

TABLE 29.—*Correlation of posture and nutrition in negro school children in Atlanta, Ga.*

	Per cent		Per cent
Good nutrition (2,306 children):		Poor nutrition (1,040 children):	
Good posture	32. 4	Good posture	16. 8
Poor posture	28. 4	Poor posture	38. 3
Good posture (1,354 children):		Poor posture (1,532 children):	
Good nutrition	55. 1	Good nutrition	42. 7
Poor nutrition	12. 9	Poor nutrition	26. 0

It is seen from Table 29 that among the children with good nutrition 32.4 per cent had good posture, but that poor posture was almost equally as prevalent (28.4 per cent) in this group. Among the total number of children examined there were 1.7 times as many with good nutrition as with good posture, and almost 1½ times as many with poor posture as there were with poor nutrition. These figures, as well as those of the former article (31), are rather disconcerting to the nutrition enthusiasts who feel that if a child has good nutrition all things else—including good posture—will be added unto him. The factors entering into the problem of posture are too complex, however, to permit of such a simple and satisfying solution.

In Figure 26 it is seen that after the age of 8 or 9 the curve of good nutrition rises, while that of good posture falls. The improved

nutrition of the older children has not been reflected in better posture, nor has it been able to prevent an actual loss in good posture.

In the lower section of the graph, after the 8 and 9 year age period the curve of poor nutrition falls while that of poor posture rises. While poor nutrition is decreasing with age, poor posture is increas-

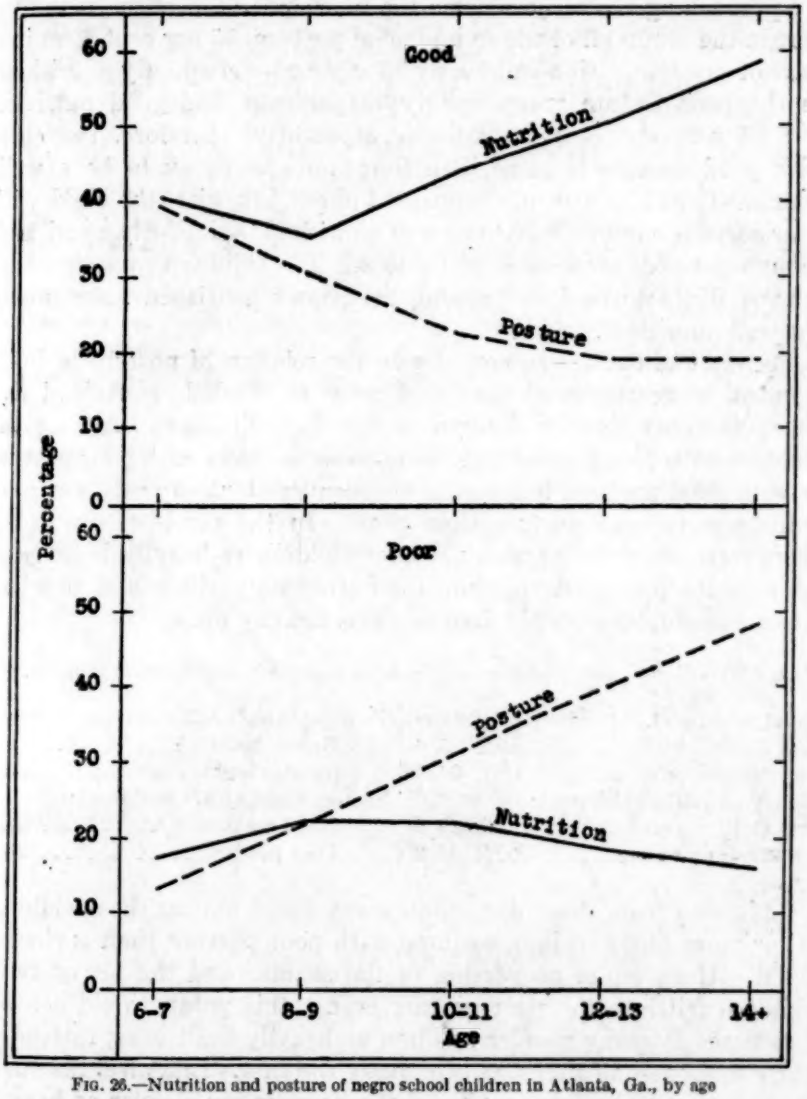

FIG. 26.—Nutrition and posture of negro school children in Atlanta, Ga., by age

ing. These graphs, of course, picture the conditions existing among the entire number of children examined.

Taking the group which was made up of only those children with poor nutrition, more than twice as many of these have poor posture as have good posture. It would seem, therefore, that poor nutrition

has a stronger influence in producing poor posture than good nutrition has in producing good posture. In other words, if a child has good nutrition he is about 14 per cent more likely to have good posture than poor posture; whereas if he has poor nutrition, he is more than twice as likely to have poor posture as good posture.

Approaching the subject from the viewpoint of posture, it is seen that in the group all of whom had good posture, 55 per cent were in a state of good nutrition and nearly 13 per cent were poorly nourished. In the poor-posture group, nearly 43 per cent had good nutrition and 26 per cent poor nutrition. Apparently, therefore, the child with good posture is more than four times as likely to be a well-nourished child as a poorly nourished one. Likewise, the child with poor posture is more likely to be well nourished than poorly nourished, though the odds are less—about 3 to 2. The child with poor posture is more likely to be found among the poorly nourished than among the well nourished.

Posture and build.—In considering the relation of posture to build it must be remembered that the group as a whole contained five times as many slender children as heavily built ones. Among the children with heavy build there were twice as many with poor posture as with good posture, but among the slender children there was only a little more poor posture than good. In the good-posture group there were six times as many slender children as heavily built ones, while in the poor-posture group there were only three and one-half times as many slender children as those heavily built.

TABLE 30.—*Correlation of posture and build in negro school children in Atlanta, Ga.*

	Per cent		Per cent
Good posture (1,354 children):		Poor posture (1,532 children):	
Heavy build	5. 6	Heavy build	9. 9
Slender build	34. 0	Slender build	35. 2
Heavy build (353 children):		Slender build (1,875 children):	
Good posture	22. 9	Good posture	24. 4
Poor posture	46. 2	Poor posture	28. 6

It is seen from these data that heavy build among these children is far more likely to be associated with poor posture than is slender build. If an equal proportion of the slender and the heavy build children fell into the poor-posture group, this group would contain five times as many slender children as heavily built ones, instead of three and one-half times, as is actually the case. Likewise, the good-posture group should contain five times as many slender as heavily built children, instead of six times, as it really does.

In Figure 27 the curves of posture and build are shown as influenced by age. We see that while the slender-build group is larger than the good-posture group, the general direction of their curves

(especially between 8 and 9 and 12 and 13) is similar. Also, though the poor-posture group is much larger than the heavy-build group, the general direction of their curves is similar.

Scapular Types

The chief studies of scapular types in this country have been made by Graves (32), (33), (34), (35), (36), (37), who was probably the first to classify the various types of human scapulæ. He recognizes

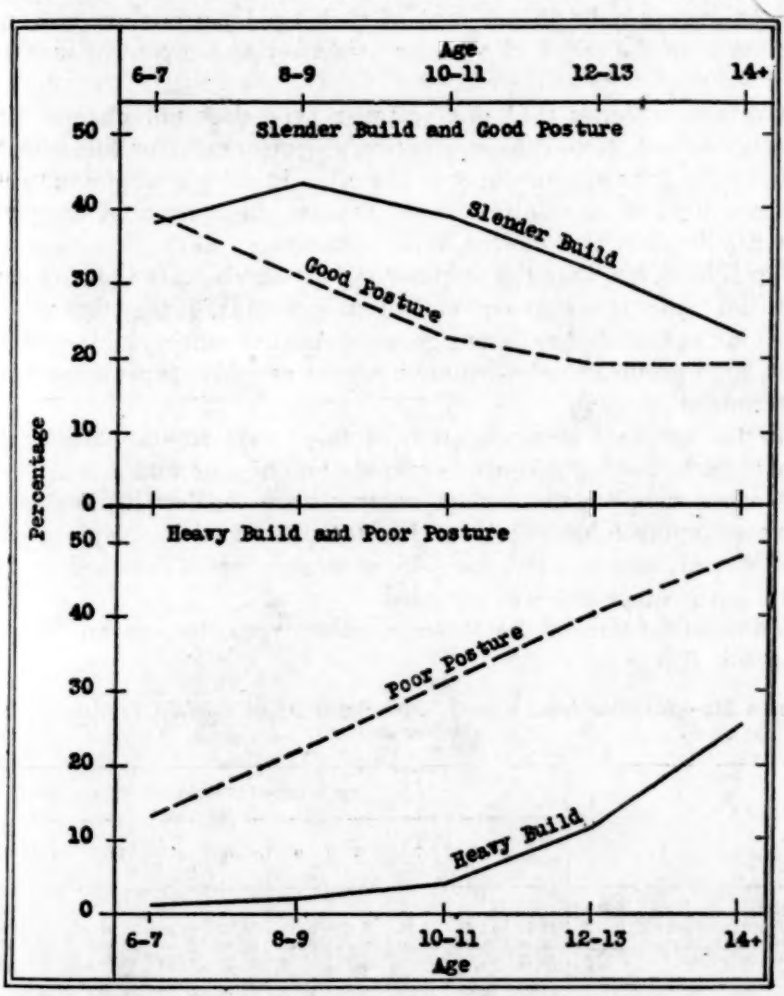

FIG. 27.—Posture and build of negro school children in Atlanta, Ga., by age

three distinct types—(1) convex, (2) straight, and (3) concave. These descriptive terms refer to the shape of the vertebral border of the scapula. Graves believes that the straight and concave types have sufficient characteristics in common to justify their being brought together in one group, which he calls "scaphoid."

It is the opinion of Graves that the scapular type is an inherited feature and that it does not change with advancing age. He has found the scaphoid type more common in children. To quote his own words (37): "Personal investigations indicate that in the mixed white stocks represented in our population, in the first 10 years of life approximately 80 per cent of such aged persons are possessors of the scaphoid and approximately only 20 per cent are possessors of the convex; whereas, in the age period between 70 and 80 years approximately only 20 per cent of such aged persons are now the possessors of the scaphoid and approximately 80 per cent of such are now the possessors of the convex."

Graves concludes that one scapular type does not change with another at any time during a person's development or life, and he believes that the age incidence of the types justifies the opinion "that the scaphoid is more often found than is the convex in the plus-potentially sick, the shorter lived of the race" (37). He does not believe, however, that the scapular type is an absolute index of constitution, since it is only one part of an individual's inheritance.

As far as known the present group of Atlanta school children is the first large group of negro children whose scapular types have been determined.

In the mechanical preparation of these data for tabulation, the few children having a concave scapula on one side and a convex on the other were omitted. Such records were too few in number to have an appreciable effect on the statistics of such a large group. The records noting only one side as straight were punched on the card as the other side was recorded.

The distribution of the three scapular types, by age and sex, is shown in Table 31.

TABLE 31.—*Scapular types among 5,062 negro school children in Atlanta, Ga., by age and sex*

	Age at nearest birthday									
	All ages	6	7	8	9	10	11	12	13	14
Both sexes:										
Scapula concave	15.74	19.41	15.96	19.93	18.61	18.22	16.35	15.44	8.69	8.24
Scapula straight	25.09	38.83	34.39	29.48	25.40	26.48	21.61	20.88	17.76	17.35
Scapula convex	59.17	41.76	49.65	50.59	55.99	55.30	62.04	63.68	73.55	74.40
Boys:										
Scapula concave	12.37	12.90	11.62	15.16	13.67	13.13	11.42	14.20	7.32	11.24
Scapula straight	23.45	38.71	30.99	29.24	26.33	24.38	20.37	19.03	11.79	15.73
Scapula convex	64.17	48.39	57.39	55.60	60.00	62.50	68.21	66.77	80.89	73.03
Girls:										
Scapula concave	18.76	24.83	20.28	24.06	23.27	23.29	20.78	16.62	9.93	6.36
Scapula straight	26.55	38.93	37.76	29.69	24.53	28.57	22.71	22.64	23.16	18.37
Scapula convex	54.68	36.24	41.96	46.25	52.20	48.14	56.51	60.74	66.91	75.27

When both sexes are considered together, it is seen that, in general, the three types conform, with respect to age, in accordance with

Graves's findings. That is, the concave and straight types decrease with age and the convex type increases.

The striking fact brought out by this investigation, however, is the preponderance of the convex type of scapula among these negro

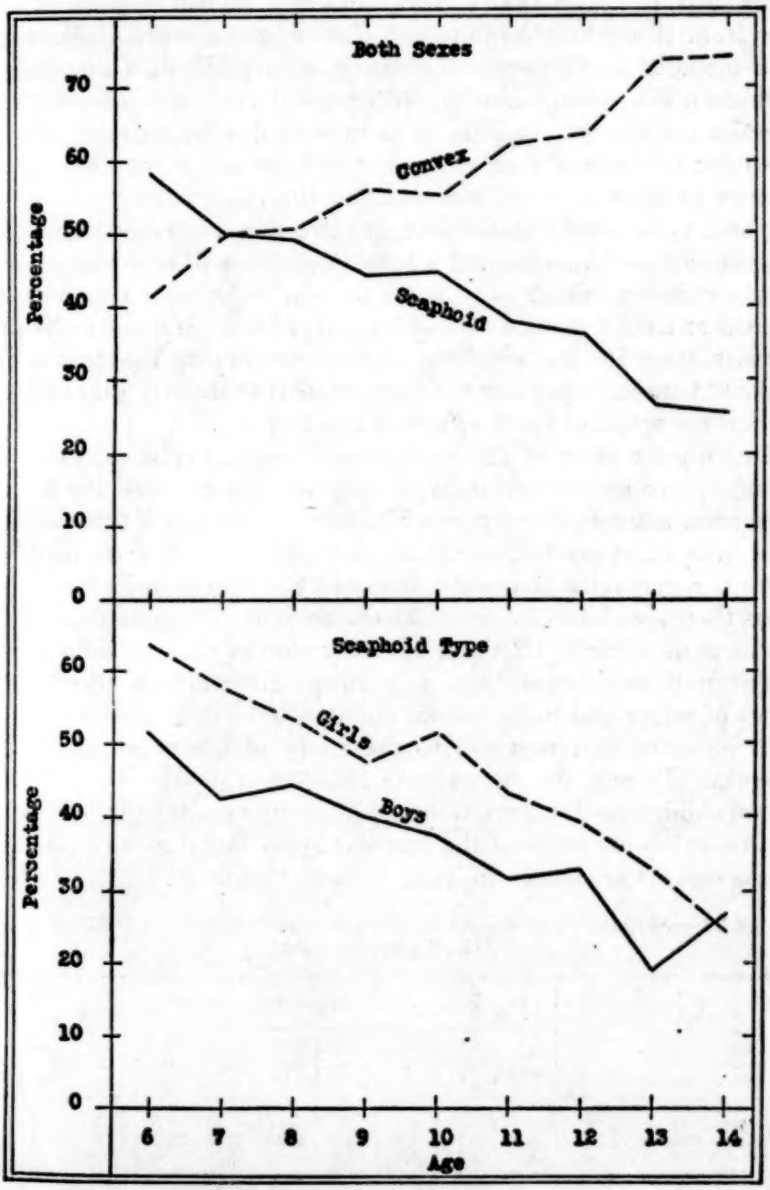

FIG. 28.—Scapular types among negro school children in Atlanta, Ga.

children. This is in direct contrast to the conditions which prevail among white children, though the excess of convex over scaphoid among the negro children of 10 years and under is not as great as

the excess of scaphoid over convex among white children of these ages. In whites, it will be remembered, the proportion of scaphoid to convex was 80 to 20 at 10 years and under; in negroes the proportion of convex to scaphoid at the same ages is 52 to 48. It should be recalled, however, that Graves's figures included scapulæ of children from 10 weeks of age up, and if very young negro children had been included in the present study it is possible that there might have been a predominance of the scaphoid type which would have brought the present findings more in accord with those of Graves. Since the two sets of data are not strictly comparable, it would not be wise to draw any conclusions as to the relative incidence of the scaphoid type among children of the two races. Nevertheless, it is suggestive that Graves found a higher incidence of scaphoid scapulæ among children from 5 to 14 years than in those from 10 weeks to 9 months or from 3 months to 6 or 7 months (37). If in the negro race, likewise, there is a less incidence of this type among the very young, it would tend to strengthen the hypothesis that there is a racial difference in the scapular types of whites and negroes.

The upper section of Figure 28 shows graphically that in only the youngest two age periods does the scaphoid type exceed the convex, and, even among the youngest children the scaphoid type is found only 1.39 times as frequently as the convex. After the age of 7 there is a generally increasing excess of the convex type until at 14 years there are almost three times as many convex scapulæ as scaphoid. At 10 years there is 1.2 times as many convex as scaphoid scapulæ.

The hypothesis that there is a racial difference in the scapular types of white and negro school children is further strengthened by data obtained just previous to the study of the negro children in Atlanta. During the school year 1924–25, a group of 3,357 white school children in Du Page County, Ill., were examined by the writer, and records were made of the scapular types found in these children. These records are shown in Table 32 and Figure 29.

TABLE 32.—*Scapular types among 3,357 white school children in Du Page County, Ill., by age and sex*

	Age at nearest birthday									
	All ages	6	7	8	9	10	11	12	13	14
Both sexes:										
Scapula concave	35.95	30.26	34.07	32.18	34.40	37.59	39.43	42.36	39.45	33.33
Scapula straight	55.76	64.10	59.26	61.49	56.42	54.70	51.54	49.86	50.87	54.04
Scapula convex	8.28	5.64	6.67	6.32	9.17	7.71	9.03	7.78	9.69	12.63
Boys:										
Scapula concave	30.90	20.72	24.06	30.12	29.82	32.08	34.07	41.28	30.66	29.20
Scapula straight	58.24	72.07	65.78	60.62	61.01	58.02	53.10	49.42	54.01	55.75
Scapula convex	10.86	7.21	10.16	9.27	9.17	9.91	12.83	9.30	15.33	15.04
Girls:										
Scapula concave	41.22	42.86	42.66	34.22	38.99	43.35	45.64	43.43	47.37	38.82
Scapula straight	53.19	53.57	53.67	62.36	51.83	51.23	49.74	50.29	48.68	51.76
Scapula convex	5.59	3.57	3.67	3.42	9.17	5.42	4.62	6.29	4.61	9.41

It is seen that the scaphoid type is widely predominant among the white school children in Du Page County, Ill., and this fact corroborates Graves's findings that the scaphoid scapula is the more common type in childhood. The excess of the scaphoid type over the convex is even greater in the Illinois study than the average given by Graves.

But a comparison of the upper sections of Figures 28 and 29 makes it perfectly plain that a very different relation between the scaphoid and convex types of scapulæ exists among the negro school children. Though the disparity in the percentages of each type found is not as great in the negro race as in the white race, it is the convex type which is predominant. It would seem that there can be little room for doubt that the difference is a racial characteristic.

In the lower section of Figure 28 it is shown that the scaphoid type of scapula among the negro children is much more prevalent among girls than among boys. Only at the 14-year-age period is there a greater percentage of scaphoid scapulæ among the boys, and even then their percentage excess is very slight. When all ages are considered, the percentage of scaphoid scapulæ among the girls is about one and one-fourth times that among the boys.

The lower section of Figure 29 shows that the scaphoid type of scapula is also more prevalent among girls in the white group in Du Page County, Ill.

It would seem that the decidedly higher incidence of the scaphoid type among girls would tend to discredit Graves's theory that this type is more often found than is the convex in "the shorter lived of the race." In the data published by Britten (38) it is seen that at no period of life does the expectation of life of the female negro fall below that of the male. On the contrary, it is greater than that of the male negro at every age period except at about 52 years, when the sexes have an even expectation of life. In the white race, also, the expectation of life of the female is greater than that of the male at all ages (38).

When only the age period under investigation (6 to 14) is considered, the latest figures published by the Bureau of the Census (39) show that in the registration States of 1920 (including the District of Columbia) both the white and colored male death rates slightly exceeded the female. This is shown clearly in the following table based on data from the Bureau of the Census (39).

TABLE 33.—*Death rate per 1,000 population in 1925 in the registration States of 1920 (including the District of Columbia)*

	All ages	Under 1	1-4	Under 5	5-9	10-14
White:						
Male	11.54	78.85	6.06	20.12	2.25	1.87
Female	10.01	69.66	5.38	16.07	1.80	1.49
Colored:						
Male	20.34	148.86	12.97	40.16	2.95	3.24
Female	19.89	118.03	11.85	33.20	2.93	3.12

The same contradiction exists in the case of the white and negro races. The convex type of scapula is more prevalent among negroes of elementary-school age than among white children of this age

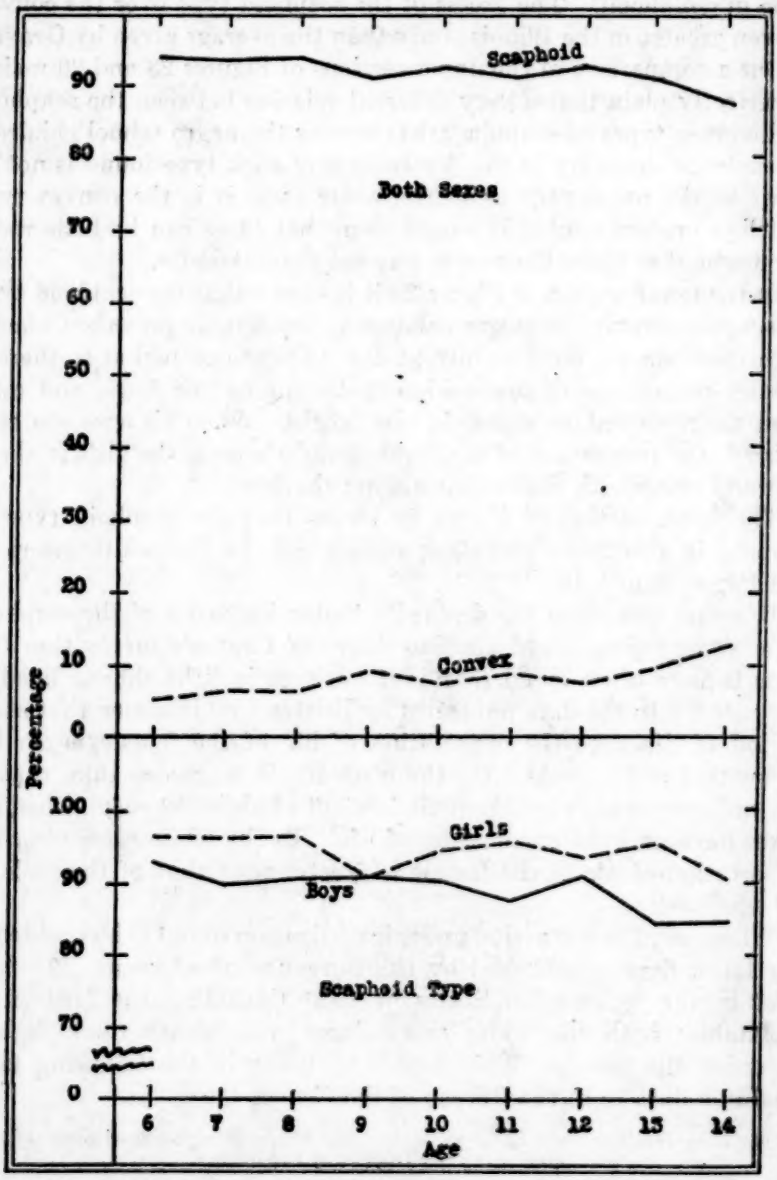

FIG. 29.—Scapular types among 3,357 white school children in Du Page County, Ill., by age

group, but the expectation of life of the negroes is less than that of the whites (38).

The lower section of Figure 29 shows that there was a generally higher incidence of the scaphoid type among the girls than among

the boys in the white Illinois group, as was found to be the case in the Atlanta negro group. If this type of scapula is "more often found than is the convex in the plus-potentially sick," as Graves suggests, one would expect greater morbidity among the girls of both races. Harmon and Whitman (40) found that among all ages in certain schools in Cleveland both white and negro girls lost more time from sickness than the white and negro boys, but in the younger white children there was practically no difference. Sydenstricker (41) has collected data from various sources which tend to show that in early childhood there appears to be more morbidity among males, while in later childhood there is a greater incidence of morbidity among females. From the accumulated data one would hardly be justified in assuming a consistent relationship of the scaphoid type of scapula with an excess of morbidity.

Summary

An intensive study of a group of more than 5,000 negro school children from 6 to 14 years of age in Atlanta, Ga., has brought out many interesting facts. It is believed that the group studied is sufficiently large to be a fair sample of urban negro school children. It is also believed that the characteristics noted in this group will probably be fairly characteristic of urban negro school children in general. The following statements appear to be warranted by the data secured:

After the age of 8 or 9, negro girls are taller than negro boys, both in standing and sitting height, through the fourteenth year. Between 10 and 11 the weight of the girls exceeds that of the boys and remains higher through the 14-year period.

The differences in the chest diameters are small; the girls have a slightly broader chest than the boys after the age of 11, but in depth of chest the girls are lower than the boys. The younger girls have a smaller chest than the boys, while the older girls have a slightly broader chest, though less deep, than that of the boys.

The height and weight curves of Atlanta urban negro children in relation to age and sex within each group are similar to those found by investigators of rural negro children.

The rural negro children of school age studied are generally slightly taller than the Atlanta urban negro children of the same age. At all ages and in both sexes the rural negro children are heavier than the urban negro children.

The growth relationship of the sexes in the white and negro races in the groups studied are different. Negro girls exceed negro boys in height much earlier than white girls gain this advantage over white boys, and they maintain their advantage longer. In weight, negro girls tend to become heavier than negro boys slightly earlier

than the white girls outweigh the white boys; their excess in weight over the boys is decidedly greater than in the case of white girls and boys; and up to 14 years of age they show no tendency to return to the male level of weight. In breadth and depth of chest the relationship of the sexes is also different in the two races.

After the age of 6 the white boys from a group of southern cities are generally slightly taller than the Atlanta negro boys. In weight the white boys are heavier than the negro boys except at 6 years of age.

In breadth and depth of chest the negro boy has a very slight advantage over the white boy. There is little difference in the size of negro and white southern city boys except in the height and weight of the older boys, where the white boys have the advantage.

In the matter of height the negro girls are generally slightly taller than the white girls. The older negro girls are heavier than the white girls of the same ages and have slightly broader chests at all ages.

The cephalic indices of the negro girls are slightly higher than those of the boys except at 10 and 11 years. The heads of the negro children tend more to the "long type" than do those of white children studied by the writer. This is in accordance with Hrdlicka's findings.

When slight and unimportant defects are included, this negro group showed an average of 5.9 defects per child. The average was slightly less than 2 when only the more important defects were considered.

Thirty-one per cent of the children were entirely free from dental caries. More girls than boys had perfect teeth up to between 13 and 14 years of age, after which the boys are in excess. In an additional 33 per cent of the group there were only one or two defective teeth present, and in some instances the amount of caries was very small. Hence, 64 per cent of the children either had excellent teeth or teeth that might be classified as good.

Almost a third of the children had tonsils which were considerably enlarged or diseased or both. A little over 4 per cent had had the tonsils removed. Probably the removed tonsils were defective, and these would increase the number of defective tonsils to over 36 per cent. Adenoid vegetations were present in almost 15 per cent of the children, this defect being practically twice as prevalent among boys as among girls.

There were about 7 per cent of the children with a visual acuity of 6/10 or less in one or both eyes. This defect showed a marked increase with age. The oldest group of boys had about twice as much 6/10 or less vision as the youngest group; among the girls the oldest group had two and three-fourths times as much as the youngest group.

The incidence of goiter in this group was low—3.56 per cent—as would be expected from the fact that Georgia is in the area of low goiter incidence.

Moderate and severe flat foot combined rises from 7.47 per cent in the 6 and 7 year group to 16.81 at 14 and over. There is a striking preponderance of flat foot among the girls.

The incidence of skin disease is low. Boys are twice as frequently affected as girls.

The incidence of heart defects is also low, and girls are more affected than boys except in the two younger groups. There were 13 boys and 10 girls in the two younger groups and 17 boys and 29 girls in the three older groups, giving the girls a total excess of 30 per cent. There is possibly some relation between the comparatively low incidence of rheumatism in the South and the low incidence of heart defects among these children.

Two bony evidences of rickets were found in 12.69 per cent of the children. Single bony changes were noted in larger percentages, but the comparative mildness of rachitic deformities was striking.

The more important physical defects were more numerous in the lowest intelligence groups. However, the fall in the number of these defects with a rise in the intelligence quotient was by no means consistent, and no definite conclusions can be drawn from such data.

Negro boys of this group generally have a greater lung capacity than the negro girls, but this is by no means so consistently true as in the case of white children. Urban negro boys in Atlanta generally have a lower vital capacity than Alabama rural negro boys; but the urban negro girls have, in general, a greater vital capacity than the rural negro girls. Southern urban white children in the cities studied have a definitely greater vital capacity than southern urban negro children in Atlanta.

Forty-five per cent of the negro group were in a state of good or excellent nutrition as judged by clinical evidence, 35 per cent fair, and 20 per cent poor or very poor. There were about one and one-half times as many well-nourished children in the oldest age group as in the youngest. Poor nutrition is more evenly distributed through the age groups.

In the matter of good nutrition the girls have a decided advantage over the boys in every age group. Poor posture as judged by the examiner is much more prevalent among the girls than among the boys. This is particularly true of the older girls.

Slender build as observed in this study has a higher incidence in the group than heavy build, and there are more slender children among the boys than among the girls. Heavy build increases with age, while both slender and medium build decrease with age.

Most of the children of heavy build were in a state of good nutrition, but in the good nutrition group there were about the same percentage of slender and heavy build children, the remainder of the group being made up of those of medium build.

The child with poor posture is more likely to be found among the poorly nourished than among the well nourished, but many well-nourished children have poor posture.

Heavy build seems far more likely to be associated with poor posture than does slender build.

The data indicate that there is a racial difference in the incidence of scapular types in negro and white children of school age. Among the Atlanta negro children the convex type was the more prevalent, while among the white children of Du Page County, Ill., there was a marked preponderance of the scaphoid type.

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COURT DECISION RELATING TO PUBLIC HEALTH

Recoveries against city because of typhoid fever and dysentery caused by impure water.—(California Supreme Court; Ritterbusch et al. *v.* City of Pittsburg, and 18 other cases, 269 P. 930; decided August 30, 1928.) Actions were brought against the city of Pittsburg to recover damages for the death of a person from typhoid fever and for the illnesses of other persons who were affected with typhoid fever and dysentery. It was alleged that the diseases were caused by the negligence of the city in permitting its water supply, furnished to the inhabitants of the city, to become polluted. The water supplied by the city required purification before being safe for human consumption, and to meet this need the city operated a chlorination plant. Evidence showed, however, that, upon a certain night in the early part of June, 1920, the chlorination plant was inoperative for about 12 hours, and that during said period unchlorinated water was let into the mains. There was also evidence which strongly tended to show that an epidemic of typhoid fever and dysentery broke forth in the city within about three weeks following the admission of the unchlorinated water into the mains. Other evidence was also introduced tending to show that the period during which the diseases occurred corresponded to the time within which epidemics of typhoid and dysentery follow upon the use of germ-infected water. Judgments were entered by the trial court in favor of the plaintiffs, and such judgments, on appeal by the city, were affirmed by the supreme court, which, in the course of its opinion, said:

> On behalf of the defendant it was sought to be shown that some effort was made by its agents and officials during the brief period when its chlorination process was not in use to purify said water by other means, such as the introduction of lime into its content; but this evidence was unsatisfactory through the failure to show that the substituted method either would or did have the effect of purifying said water.
>
> Considering the evidence in each of these cases as a whole, the deduction seems to be inescapable that the epidemic of typhoid fever and dysentery which broke forth in the city of Pittsburg within the aforesaid period after its agents and officials in charge of its water system had permitted unchlorinated water to be served through its water mains to its inhabitants was directly traceable to that cause,

and that the cases of death or illness which form the basis of each of these actions were the direct result of the negligence of the agents and officials of said municipality in the foregoing regard.

The argument put forward by the appellant to the effect that the epidemic in question might have had its origin in other sources, such as the use of water from wells in various parts of the city, creates at best but a conflict in the evidence as to the source of infection, and this evidence is weakened as to its inferences by the fact that, while these other sources of water supply had existed for a considerable period of time prior to the month of June, 1920, no epidemic had resulted until the particular period following the pollution of the municipal water supply.

* * * * * * *

Treated by and large, we are of the opinion that the judgment rendered and entered by the trial court in each of the foregoing cases is sufficiently supported by the findings of fact and conclusions of law applicable to each of said cases, and that as to each, the evidence was amply sufficient to justify the findings of fact and conclusions of law of the trial court.

PUBLIC HEALTH ENGINEERING ABSTRACTS

Larviphage Fish and Antimalarial Control with Gambusia in the Territory of Rovigno, Istria. M. Sella. *Rivista di Malariologia*, Anno VI, Fasc. 6, Nov.–Dec., 1927, pp. 881–909. (Abstract by E. H. Gage.)

The first intensive experiment to determine whether or not the introduction of *Gambusia* is a feasible and economically practicable means of controlling malaria in Italy was carried out during 1926–27 in a zone of 300 sq. km. (116 sq. mi.) with a population of about 17,000 in the vicinity of Rovigno, Istria; the Institute of Marine Biology, Rovigno, the Station for Experiment in Malaria Control, Rome, the Public Health Service, the Civil Engineering Corps, and the Prefecture cooperating.

In the zone selected are more than 800 small ponds, 80 to 90 per cent of which are temporary. *Gambusia* were found to thrive in the permanent ponds, to resist the winter, provided there is mud for shelter, and to tolerate water of greater salt content than do the larvae of *A. claviger* or *A. elutus*. From these permanent ponds the fish were transferred each year to the seasonal ponds. The transfer was found to be more effective if made in the fall and using fish of average size, since the young fish were then available for "disinfestation" the following summer.

In the spring *Gambusia* are less active, so limited clearing and the use of Paris green are suggested as auxiliary methods. A combined use of *Gambusia* and Paris green was tried in one part of the zone with no better result than where *Gambusia* alone were used. The fish were found to destroy all, or nearly all, larvae during the warmest months although evaporation is also mentioned as a factor.

It is reported that malaria was widespread in the region during the past, and that a noticeable improvement has been observed during 1926 and 1927. Severe outbreaks of malaria have occurred at Capodistria and Gorgo, beyond the control zone but in the same district.

The cost of control by *Gambusia* is said to be about one-third that of control by Paris green.

Sewage Treatment Works of the Emscher Association. M. Pruss. *Das Essener Heft*, 1927, published by the Prussian Bureau of Water, Earth, and Air Hygiene, Berlin, pp. 39–93. (Abstract by J. K. Hoskins.)

The various sewage works of the Emscher district are described and problems of design and operation are interestingly discussed. There are 25 treatment plants in which sludge is treated by digestion. The combined content of the sludge digestion tanks is about 43,000 cu. m., and the annual wet sludge volume is 120,000 cu. m., which in an air-dried condition amounts to 65,000 cu. m. Such large masses of sludge demand continuous efforts toward improved methods for reduction of volume.

One promising innovation is described, consisting of the recirculation of sludge from bottom to top of the tank by means of pumping. In this way the time for digestion of the fresh sludge is reduced by one-half. This reaeration is said to reduce the carbonic acid content of the bottom layers of sludge, thus favoring bacterial multiplication and consequently hastening the digestion of organic material. Production of gas is also increased, and floating scum is eliminated.

Another study is described in which heat transfer from the incoming sewage to the digesting sludge is obtained by special tank design. Higher, more uniform temperature thus provided for the digestion chamber encourages more rapid biological action.

Pollution of the Rhine by coke by-products waste from 100 coke plants amounts to about 10,000 tons of pure phenols annually. This waste has seriously affected the fishing industries because of the objectionable tastes imparted to the fish. Treatment of the phenol-containing wastes consists in extracting the phenolic substances from the ammonia still waters by means of benzol, and then distilling the benzol for re-use. Other possible methods of phenol recovery are discussed. Considerable success has also been obtained by destruction of the phenolic compounds on aerated biological filters.

Euglena in Relation to Combined Nitrogen. Daggmar H. Peterson. Report of the Department of Sewage Disposal of the New Jersey Agricultural Experiment Station for year ending June 30, 1927, pp. 310–315. (Abstract by H. R. Crohurst.)

A single experiment was made using liquid from a resting Imhoff tank which contained chlorophyll-bearing *Euglena polymorpha*. A portion of this was used as a control and to another portion was added lactic acid to the amount of 0.6 per cent. By making frequent chemical analyses for ammonia nitrogen and total nitrogen, and hydrogen ion concentration, and determining the bacteria and protozoa counts, the author concludes that, according to the data collected, colorless *Euglena* in a nutritive medium consumes rather than increases the amount of combined nitrogen.

Milorganite—A New Fertilizer Material. Victor H. Kadish. *Industrial and Engineering Chemistry*, vol. 20, No. 1, January, 1928, pp. 9–10. (Abstract by W. C. Purdy.)

Milorganite is a fertilizer that is now being produced on a commercial scale at the Milwaukee sewage disposal plant. Analysis shows a large content of available organic nitrogen and some phosphoric acid. Tests at the College of Agriculture, University of Wisconsin, over a period of nearly four years, show that this new fertilizer compares favorably with dried blood, fish scrap, and cottonseed meal. Practical tests covering three years on 100 plots showed further favorable results on such crops as corn, potatoes, vegetables, etc.

It is expected that operating expenses of the sewage plant will be to some extent offset by the income from the sale of this fertilizer.

Reservoir Covering Pays Dividends. C. W. Klassen and H. F. Ferguson. *Illinois Health News*, vol. 14, No. 4, April, 1928, pp. 106–107. (Abstract by Chester Cohen.)

Pumping a well-water supply into an open concrete collecting reservoir at Edwardsville resulted in a luxuriant growth of algae which necessitated bimonthly cleaning of the reservoir. Copper sulphate treatment was only partially successful, since "the algal growth was still sufficient to impart objectionable tastes which were often complained of by the consumers, and the treatment was somewhat of a nuisance. The uncovered reservoir also subjected the entire public supply to contamination by dust, dirt, insects, animal pollution, etc., and contamination introduced by workmen during the frequent cleanings. The cleaning operations not only introduced contamination but also caused inconvenience and interruptions and, because of reduced storage, a fire hazard."

The investment of $1,500 for covering the reservoir eliminated these objections and in addition showed a net annual saving of $61.50 for chemichls, labor, and cleaning operations. Although the saving is small in monetary value, the cleaner, safer, and otherwise improved quality of the supply and the resulting satisfaction among the consumers represent a value far exceeding the cash saving.

Sewage Disposal. Pamphlet issued by Connecticut State Department of Health. (Abstract by C. G. Gillespie.)

This is one of the most comprehensive 36-page bulletins on sewage disposal that has yet been issued. It deals with such subjects as the impracticability of flush toilets under certain conditions, and recites that the state sanitary code prohibits a privy, cesspool, or sewage disposal within 50 feet of a stream or depression in which water flows into a public supply, and prohibits surface disposal of sewage within 250 feet of a watercourse which it can reach. The various types of privies are described, also chemical toilets. The troubles experienced with the latter are given as lack of tank capacity, leakage of chemical through a poorly seated valve or defective joint, failure to make use of the agitator or the use of a chemical that is a deodorant only and not a disinfectant. These toilets should be kept under careful supervision, and if properly constructed they are very satisfactory and have decided advantages over privies.

In a rather full discussion of septic tanks the principal points of importance are given as (1) sufficient capacity; (2) arrangement of inlets and outlets; (3) arrangement for cleaning. Under no circumstances should the capacity be less than 300 gallons. Some manufactured tanks are too small. The mere circular shape is not necessarily a detriment. The T inlet and outlet are recommended, but batteries of small tanks connected together are definitely condemned. Disposal of effluent is discussed generally from the standpoint of absorption in the soil through a leaching cesspool or tile fields. An interesting table of number and size of leaching cesspools for different soils and connected load is given, also methods for determining the absorptive capacities of soils. For the tile fields the length of tile per person varies from 20 to 120 feet per person, with a reduction of 75 per cent in the case of schools and factories. The siphon dosing apparatus is urged as "desirable."

Sand filters for difficult situations are described, together with odor control precautions. Chlorination is described as sometimes necessary and helpful, even though its application is precarious in small installations.

Other points discussed are house traps, grease traps, sizes and grades of sewers, per capita flow allowances; also considerable data on figuring the capacity or sanitary design of treatment plants.

Efficiency of a Tannery Waste Treatment Works. T. C. Schaetzle and A. W. Blohm. *Bulletin*, Maryland State Department of Health, vol. 1, No. 3, April, 1928, pp. 73–84. (Abstract by A. H. Wieters.)

In the first part of this article the operation of the tannery factory is briefly discussed. The latter part is devoted to a description of the waste treatment works.

Wastes are screened through a Dorrco screen with a ⅛-inch slotted plate and then pass through a Dorr thickener. From here they pass through a dry run to a tidal basin. Part of the sludge is dried on a bed and the remainder is lagooned. The tank has a detention period varying from 0.59 to 2.16 days.

Average results of analysis show a reduction of suspended solids of 44 per cent, and oxygen consumed 26 per cent. The effluent has a high color, is turbid, and is still high in B. O. D.

Tables showing results of analyses are included. Experiments were conducted to determine the effect of coagulants. Lime, alum, and iron were the most promising. "Darco" and "Norit" filters gave some promise. No data as to amount of coagulants are included.

Conclusions state that the screen and clarifier are functioning as well as could be expected, but the effluent was still highly colored, very turbid, contained much suspended matter, and had high oxygen-consumed and B. O. D. values.

DEATHS DURING WEEK ENDED OCTOBER 6, 1928

Summary of information received by telegraph from industrial insurance companies for the week ended October 6, 1928, and corresponding week of 1927. (From the Weekly Health Index October 10, 1928, issued by the Bureau of the Census, Department of Commerce)

	Week ended Oct. 6, 1928	Corresponding week, 1927
Policies in force	71, 539, 204	68, 901, 344
Number of death claims	11, 849	11, 264
Death claims per 1,000 policies in force, annual rate	8. 7	8. 5

Deaths from all causes in certain large cities of the United States during the week ended October 6, 1928, infant mortality, annual death rate, and comparison with corresponding week of 1927. (From the Weekly Health Index, October 10, 1928, issued by the Bureau of the Census, Department of Commerce)

City	Week ended Oct. 6, 1928		Annual death rate per 1,000, corresponding week, 1927	Deaths under 1 year		Infant mortality rate, week ended Oct. 6, 1928 [1]
	Total deaths	Death rate [1]		Week ended Oct. 6, 1928	Corresponding week, 1927	
Total (69 cities)	7, 171	12. 2	11. 1	782	727	62
Akron	39			4	6	43
Albany [2]	27	11. 7	10. 0	1	4	20
Atlanta	70	14. 3	13. 4	14	7	
White	32		9. 2	8	2	
Colored	38	(*)	23. 3	6	5	
Baltimore [2]	206	13. 0	13. 3	30	30	95
White	158		11. 5	26	24	104
Colored	48	(*)	23. 8	4	6	63
Birmingham	77	18. 1	12. 9	13	5	111
White	34		9. 4	7	3	97
Colored	43	(*)	18. 5	6	2	135
Boston	217	14. 2	14. 1	23	28	64
Bridgeport	35			2	1	37
Buffalo	173	16. 3	11. 1	20	15	86
Cambridge	26	10. 8	10. 9	2	3	36
Camden	33	12. 7	8. 6	5	3	80

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended October 6, 1928, infant mortality, annual death rate, and comparison with corresponding week of 1927—Continued

City	Week ended Oct. 6, 1928		Annual death rate per 1,000, corresponding week, 1927	Deaths under 1 year		Infant mortality rate, week ended Oct. 6, 1928 [2]
	Total deaths	Death rate [1]		Week ended Oct. 6, 1928	Corresponding week, 1927	
Canton	17	7.6	8.3	5	3	119
Chicago [3]	696	11.5	10.7	74	72	63
Cincinnati	136	17.2	13.5	14	16	85
Cleveland	200	10.4	9.2	29	23	79
Columbus	87	15.3	6.4	12	6	112
Dallas	38	9.1	8.6	5	3	----
White	28	----	8.5	4	3	----
Colored	10	(4)	9.5	1	0	----
Dayton	43	12.2	10.4	2	4	33
Denver	97	17.2	14.0	10	9	----
Des Moines	34	11.7	9.1	0	2	0
Detroit	292	11.1	9.1	46	46	71
Duluth	17	7.6	7.3	0	1	0
El Paso	30	13.3	9.6	10	6	----
Erie	25	----	----	2	2	41
Fall River [3]	30	11.7	12.6	2	5	34
Flint	27	9.5	9.5	8	13	102
Fort Worth	33	10.3	13.1	3	2	----
White	26	----	11.2	1	1	----
Colored	7	(4)	26.6	2	1	----
Grand Rapids	29	9.2	7.7	3	2	45
Houston	40	----	----	4	7	----
White	22	----	----	3	4	----
Colored	18	(4)	----	1	3	----
Indianapolis	86	11.8	11.1	4	5	30
White	70	----	10.4	4	5	35
Colored	16	(4)	16.3	0	0	0
Jersey City	75	12.1	11.2	6	10	45
Kansas City, Kans	26	11.5	17.3	1	3	21
White	20	----	15.2	1	3	25
Colored	6	(4)	27.1	0	0	0
Kansas City, Mo	98	13.1	10.2	9	8	64
Knoxville	32	15.9	12.3	3	4	65
White	26	----	10.4	3	4	73
Colored	6	(4)	25.6	0	0	0
Los Angeles	190	----	----	10	15	29
Louisville	79	12.5	10.8	13	2	109
Lowell	22	10.4	10.4	5	6	105
Lynn	13	6.4	12.4	1	0	25
Memphis	54	14.8	21.6	7	12	82
White	30	----	19.0	4	8	75
Colored	24	(4)	26.3	3	4	94
Milwaukee	127	12.2	11.7	11	18	49
Minneapolis	103	11.8	10.5	9	4	54
Nashville	54	20.4	12.5	9	4	142
White	36	----	12.1	9	4	192
Colored	18	(4)	13.4	0	0	0
New Bedford	21	9.2	7.0	5	1	108
New Haven	43	12.0	10.7	6	3	85
New Orleans	148	18.0	19.4	17	18	82
White	85	----	15.6	8	11	58
Colored	63	(4)	30.3	9	7	131
New York	1,432	12.4	10.1	151	125	61
Bronx Borough	187	10.3	10.0	10	14	30
Brooklyn Borough	452	10.2	8.3	67	43	67
Manhattan Borough	607	18.1	14.1	61	52	72
Queens Borough	148	9.1	6.3	10	15	40
Richmond Borough	38	13.2	11.0	3	1	54
Newark, N. J	103	11.4	11.6	8	14	41
Oakland	55	10.5	9.0	4	3	43
Oklahoma City	32	----	----	1	1	----
Omaha	42	9.9	8.1	5	1	58
Paterson	33	11.9	15.6	1	4	17
Philadelphia	443	11.2	10.2	44	39	59
Pittsburgh	199	15.5	11.8	22	17	72
Portland, Oreg	66	----	----	3	4	32
Providence	69	12.6	11.9	4	6	35
Richmond	60	16.1	16.6	4	5	52
White	38	----	13.8	3	3	61
Colored	22	(4)	23.4	1	2	37

Footnotes at end of table.

Deaths from all causes in certain large cities of the United States during the week ended October 6, 1928, infant mortality, annual death rate, and comparison with corresponding week of 1927—Continued

City	Week ended Oct. 6, 1928		Annual death rate per 1,000, corresponding week, 1927	Deaths under 1 year		Infant mortality rate, week ended Oct. 6, 1928 [2]
	Total deaths	Death rate [1]		Week ended Oct. 6, 1928	Corresponding week, 1927	
Rochester	84	13.4	10.1	13	4	105
St. Louis	207	12.8	13.7	15	14	50
St. Paul	51	10.6	9.0	2	2	19
Salt Lake City [3]	27	10.2	7.7	5	4	82
San Antonio	47	11.3	14.3	7	9	
San Diego	7	3.1	15.4	2	6	38
San Francisco	146	13.0	14.4	7	10	44
Schenectady	29	16.3	6.2	2	3	63
Seattle	67	9.1	10.1	3	2	31
Somerville	24	12.2	9.8	1	3	35
Spokane	17	8.1	10.0	0	2	0
Springfield, Mass	28	9.8	11.0	5	0	79
Syracuse	43	11.3	11.6	0	2	0
Tacoma	18	8.5	7.8	0	1	0
Toledo	57	9.5	9.4	8	4	77
Trenton	38	14.3	21.7	4	8	68
Washington, D. C	132	12.5	12.0	15	8	86
White	79		10.6	10	6	83
Colored	53	(4)	16.1	5	2	92
Waterbury	20			5	0	145
Wilmington, Del	28	11.4	9.1	1	6	26
Worcester	35	9.3	12.5	6	9	73
Yonkers	21	9.1	6.6	2	1	46
Youngstown	13	3.9	6.8	4	3	53

[1] Annual rate per 1,000 population.
[2] Deaths under 1 year per 1,000 births. Cities left blank are not in the registration area for births.
[3] Deaths for week ended Friday, Oct. 5, 1928.
[4] In the cities for which deaths are shown by color the colored population in 1920 constituted the following percentages of the total population: Atlanta, 31; Baltimore, 15; Birmingham, 39; Dallas, 15; Fort Worth, 14; Indianapolis, 11; Kansas City, Kans., 14; Knoxville, 15; Louisville, 17; Memphis, 38; Nashville, 30; New Orleans, 26; Richmond, 32; and Washington, D. C., 25.

PREVALENCE OF DISEASE

No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring

UNITED STATES

CURRENT WEEKLY STATE REPORTS

These reports are preliminary and the figures are subject to change when later returns are received by the State health officers

Reports for Weeks Ended October 6, 1928, and October 8, 1927

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended October 6, 1928, and October 8, 1927

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927
New England States:								
Maine	3		1	1	19	37	0	0
New Hampshire			7		39		0	
Vermont	6				13	1	0	0
Massachusetts	85	92	3	5	102	94	1	1
Rhode Island	13	5			7	1	0	1
Connecticut	29	36	12	2	5	14	0	2
Middle Atlantic States:								
New York	136	211	[1] 9	[1] 6	89	71	26	0
New Jersey	78	127	1	8	12	14	1	1
Pennsylvania	163	180			171	86	5	0
East North Central States:								
Ohio	84		6		27		5	
Indiana	48	51	15	7	1	12	0	0
Illinois	90	109	8	12	38	18	11	3
Michigan	66	76			21	9	6	1
Wisconsin	18	23	19	45	12	84	1	7
West North Central States:								
Minnesota	26	41	1	3	38	2	1	2
Iowa	15	18	1				0	1
Missouri	53	61	6	6	5	4	4	1
North Dakota	5						1	
South Dakota	2	7		1	1	13	1	0
Nebraska	54	15			13	1	0	1
Kansas	24	54		4		36	3	2
South Atlantic States:								
Delaware		1			1	5	0	0
Maryland [2]	18	35	7	3	7	7	1	1
District of Columbia	23	22	1	1	1	3	0	0
West Virginia	11	20	12	2	2	1	0	0
North Carolina		184				113		1
South Carolina	94	89	664	243		52	0	0
Georgia	20	45	110	19	3	17	0	1
Florida	14	20	9		3		1	0

[1] New York City only.

[2] Week ended Friday.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended October 6, 1928, and October 8, 1927—Continued

Division and State	Diphtheria		Influenza		Measles		Meningococcus meningitis	
	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927
East South Central States:								
Kentucky	72	64	20	32		41	0	1
Tennessee	114	120	71	13	8	15	0	1
Alabama	51	54					0	
Mississippi								
West South Central States:								
Arkansas	18	11	47	27	14	6	0	0
Louisiana	20	42	5	3	5	7	0	0
Oklahoma [1]	81	99	8	44	5	12	2	1
Texas	23	55	28	26	13	2	1	0
Mountain States:								
Montana	5	1			13	4	3	1
Idaho	2	1					0	1
Wyoming	2	1			1	18	0	0
Colorado	21	29	2	4	2	2	3	2
New Mexico	3	7				47	0	0
Arizona	3	4	3			7	0	0
Utah [1]	2	6			2		1	0
Pacific States:								
Washington	6	9			35	38	2	4
Oregon	9	8	26	8	17	8	0	1
California	67	102	27	23	18	44	3	8

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927
New England States:								
Maine	3	13	6	23	0	0	8	4
New Hampshire	2		4		0		0	
Vermont	0	4	13	4	0	0	0	1
Massachusetts	0	115	111	142	0	0	15	16
Rhode Island	0	8	5	13	0	1	1	2
Connecticut	6	13	12	21	0	0	1	3
Middle Atlantic States:								
New York	32	59	102	131	0	7	103	48
New Jersey	4	14	39	48	0	0	20	6
Pennsylvania	33	29	136	195	1	0	102	38
East North Central States:								
Ohio	14	76	173		8		46	
Indiana	2	9	64	83	8	7	21	29
Illinois	7	40	180	146	5	10	40	39
Michigan	2	30	96	89	9	9	11	14
Wisconsin	0	12	77	45	3	8	4	19
West North Central States:								
Minnesota	14	12	70	56	0	0	5	7
Iowa	1	12	61	30	0	12	5	3
Missouri	0	18	71	58	3	1	12	21
North Dakota	1		12		0		3	
South Dakota	2	8	16	34	7	3	4	3
Nebraska	5	10	34	29	4	0	1	1
Kansas	2	15	91	79	15	3	15	31
South Atlantic States:								
Delaware	0	0	3	1	0	0	1	2
Maryland [1]	4	1	41	37	0	0	34	27
District of Columbia	2	1	10	11	0	0	2	4
Virginia		1						
West Virginia	8	17	40	77	0	10	33	39
North Carolina		1		147		10		28
South Carolina	1	2	23	29	0	5	61	49
Georgia	0	10	29	34	0	0	28	34
Florida	1	1	4	14	0	1	3	5

[1] Week ended Friday.

[2] Exclusive of Oklahoma City and Tulsa.

Cases of certain communicable diseases reported by telegraph by State health officers for weeks ended October 6, 1928, and October 8, 1927—Continued

Division and State	Poliomyelitis		Scarlet fever		Smallpox		Typhoid fever	
	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927	Week ended Oct. 6, 1928	Week ended Oct. 8, 1927
East South Central States:								
Kentucky	2	----	33	----	0	----	20	----
Tennessee	1	3	32	46	4	1	63	81
Alabama	6	0	40	32	0	1	38	38
Mississippi	2	2	29	25	0	6	32	19
West South Central States:								
Arkansas	0	1	33	12	0	3	23	48
Louisiana	0	0	18	10	2	3	28	26
Oklahoma [3]	1	10	44	32	5	12	76	102
Texas	1	15	26	46	5	4	36	48
Mountain States:								
Montana	1	2	8	13	9	23	14	10
Idaho	1	1	----	3	4	6	3	1
Wyoming	1	1	25	8	2	0	2	1
Colorado	10	4	17	27	5	0	24	16
New Mexico	1	13	4	2	0	0	9	6
Arizona	1	5	----	2	0	0	2	8
Utah [3]	1	4	9	2	1	5	4	2
Pacific States:								
Washington	17	15	23	20	17	12	13	5
Oregon	4	18	22	12	10	10	6	4
California	6	36	98	99	17	4	18	8

[2] Week ended Friday. [3] Exclusive of Oklahoma City and Tulsa.

SUMMARY OF MONTHLY REPORTS FROM STATES

The following summary of monthly State reports is published weekly and covers only those States from which reports are received during the current week:

State	Meningococcus meningitis	Diphtheria	Influenza	Malaria	Measles	Pellagra	Poliomyelitis	Scarlet fever	Smallpox	Typhoid fever
August, 1928										
Colorado	0	16	1	----	21	1	15	42	0	16
Delaware	1	1	----	1	1	1	3	6	0	4
September, 1928										
Arizona	4	2	----	----	16	----	0	3	1	6
Arkansas	0	47	73	1,287	22	73	1	43	3	154
Connecticut	3	73	17	1	44	----	14	37	0	11
Michigan	----	230	2	7	74	----	26	295	34	58
Nebraska	0	40	1	----	5	----	12	82	86	12

August, 1928

Anthrax: Cases
- Delaware 1

Chicken pox:
- Colorado 29
- Delaware 4

Mumps:
- Colorado 45
- Delaware 1

Ophthalmia neonatorum:
- Colorado 1

Rocky Mountain spotted or tick fever: Cases
- Colorado 1

Septic sore throat:
- Colorado 1

Vincent's angina:
- Colorado 6

Whooping cough:
- Colorado 135
- Delaware 3

September, 1928

Anthrax:	
Arkansas	1
Chicken pox:	
Arizona	3
Arkansas	7
Connecticut	22
Michigan	84
Nebraska	12
Dysentery:	
Connecticut (bacillary)	1
Michigan	1
German measles:	
Connecticut	6
Nebraska	1
Lead poisoning:	
Connecticut	2
Lethargic encephalitis:	
Connecticut	2
Michigan	2
Nebraska	1
Mumps:	
Arizona	7
Arkansas	51
Connecticut	30
Michigan	45
Nebraska	9
Ophthalmia neonatorum:	
Arkansas	1
Connecticut	1
Paratyphoid fever:	
Connecticut	2
Nebraska	1
Rabies in man:	
Michigan	1
Septic sore throat:	
Connecticut	4
Michigan	11
Trachoma:	
Arizona	12
Nebraska	1
Undulant fever:	
Arizona	1
Connecticut	1
Michigan	2
Whooping cough:	
Arizona	21
Arkansas	27
Connecticut	130
Michigan	879
Nebraska	40

GENERAL CURRENT SUMMARY AND WEEKLY REPORTS FROM CITIES

The 97 cities reporting cases used in the following table are situated in all parts of the country and have an estimated aggregate population of more than 30,970,000. The estimated population of the 91 cities reporting deaths is more than 30,275,000. The estimated expectancy is based on the experience of the last nine years, excluding epidemics.

Weeks ended September 29, 1928, and October 1, 1927

	1928	1927	Estimated expectancy
Cases reported			
Diphtheria:			
42 States	1,493	1,731	
97 cities	529	754	794
Measles:			
41 States	601	749	
97 cities	111	146	
Poliomyelitis:			
43 States	212	676	
Scarlet fever:			
42 States	1,518	1,654	
97 cities	456	490	490
Smallpox:			
42 States	256	146	
97 cities	12	26	12
Typhoid fever:			
42 States	902	841	
97 cities	134	109	184
Deaths reported			
Influenza and pneumonia:			
91 cities	417	352	
Smallpox:			
91 cities	0	0	

City reports for week ended September 29, 1928

The "estimated expectancy" given for diphtheria, poliomyelitis, scarlet fever, smallpox, and typhoid fever is the result of an attempt to ascertain from previous occurrence the number of cases of the disease under consideration that may be expected to occur during a certain week in the absence of epidemics. It is based on reports to the Public Health Service during the past nine years. It is in most instances the median number of cases reported in the corresponding weeks of the preceding years. When the reports include several epidemics or when for other reasons the median is unsatisfactory, the epidemic periods are excluded and the estimated expectancy is the mean number of cases reported for the week during non-epidemic years.

If the reports have not been received for the full nine years, data are used for as many years as possible, but no year earlier than 1919 is included. In obtaining the estimated expectancy, the figures are smoothed when necessary to avoid abrupt deviation from the usual trend. For some of the diseases given in the table the available data were not sufficient to make it practicable to compute the estimated expectancy.

Division, State, and city	Population July 1, 1926, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
NEW ENGLAND									
Maine:									
Portland	76,400	0	1	0	0	0	0	0	0
New Hampshire:									
Concord	[1] 22,546	0	0	0	0	0	0	0	1
Vermont:									
Barre	[1] 10,008	0	0	0	0	0	0	0	0
Burlington	[1] 24,089	0	0	0	0	0	0	0	2
Massachusetts:									
Boston	787,000	8	30	9	1	0	8	1	14
Fall River	131,000	0	3	1	0	0	11	1	3
Springfield	145,000	1	2	3	0	0	1	4	1
Worcester	193,000	1	5	2	0	0	3	4	1
Rhode Island:									
Pawtucket	71,000	0	1	1	0	0	0	0	0
Providence	275,000	0	5	6	0	0	0	0	2
Connecticut:									
Bridgeport	[2]	0	5	4	2	2	1	0	0
Hartford	164,000	------	4	------	------	------	------	------	------
New Haven	182,000	------	2	------	------	------	------	------	------
MIDDLE ATLANTIC									
New York:									
Buffalo	544,000	4	13	15	------	0	1	0	12
New York	5,924,000	0	106	70	11	2	13	19	84
Rochester	321,000	0	7	1	------	0	1	1	5
Syracuse	185,000	1	4	0	------	0	0	0	4
New Jersey:									
Camden	131,000	0	4	0	0	0	1	0	0
Newark	459,000	4	9	24	1	0	1	4	5
Trenton	134,000	0	3	2	0	0	0	0	0
Pennsylvania:									
Philadelphia	2,008,000	7	46	18	0	2	2	2	22
Pittsburgh	637,000	5	21	16	0	1	1	3	19
Reading	114,000	6	2	2	0	0	0	0	2
EAST NORTH CENTRAL									
Ohio:									
Cincinnati	411,000	1	10	8	0	0	0	0	7
Cleveland	960,000	15	39	12	2	0	4	1	8
Columbus	285,000	3	6	2	1	1	2	0	0
Toledo	295,000	4	12	1	1	1	1	0	3
Indiana:									
Fort Wayne	99,900	0	3	3	0	0	0	0	1
Indianapolis	367,000	2	11	15	0	0	4	3	7
South Bend	81,700	2	1	1	0	0	0	0	1
Terre Haute	71,900	0	1	0	0	0	0	0	0
Illinois:									
Chicago	3,048,000	20	60	70	1	1	13	2	29
Springfield	64,700	0	1	0	0	0	0	0	0
Michigan:									
Detroit	[3] 1,242,044	25	54	34	0	2	3	4	20
Flint	136,000	11	8	2	0	0	0	0	2
Grand Rapids	156,000	2	4	0	0	1	0	1	

[1] Estimated, July 1, 1925. [2] No estimate made. [3] Special census.

City reports for week ended September 29, 1928—Continued

Division, State, and city	Population July 1, 1926, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST NORTH CENTRAL—continued									
Wisconsin:									
Kenosha	52,700	2	0	0	0	0	0	1	0
Milwaukee	517,000	24	14	2	0	0	7	1	3
Racine	69,400	1	2	0	0	0	0	0	0
Superior	[1] 39,671	0	0	0	0	0	0	0	0
WEST NORTH CENTRAL									
Minnesota:									
Duluth	113,000	9	2	2	0	0	1	1	0
Minneapolis	434,000	18	23	4	0	0	4	7	3
St. Paul	248,000	16	17	4	0	0	0	3	5
Iowa:									
Davenport	[1] 52,469	1	1	0	0	-------	0	0	-------
Des Moines	146,000	0	5	0	0	-------	0	0	-------
Sioux City	78,000	1	2	1	0	-------	0	0	-------
Waterloo	36,900	1	0	1	0	-------	0	9	-------
Missouri:									
Kansas City	375,000	1	6	3	0	1	1	3	6
St. Joseph	78,400	1	1	0	0	0	0	2	3
St. Louis	830,000	3	33	14	0	0	0	2	-------
North Dakota:									
Fargo	[1] 26,403	0	1	0	0	0	0	0	0
Grand Forks	[1] 14,811	0	1	0	0	-------	0	0	-------
South Dakota:									
Aberdeen	[1] 15,036	0	0	0	0	-------	0	0	-------
Sioux Falls	[1] 30,127	0	1	0	0	-------	0	0	-------
Nebraska:									
Omaha	216,000	0	13	8	0	0	0	1	2
Kansas:									
Topeka	56,500	0	2	0	0	0	1	0	0
Wichita	92,500	0	3	2	0	0	0	0	1
SOUTH ATLANTIC									
Delaware:									
Wilmington	124,000	0	0	0	0	0	0	0	1
Maryland:									
Baltimore	808,000	3	23	12	2	0	0	8	18
Cumberland	[1] 33,741	0	1	0	0	0	1	0	0
Frederick	[1] 12,035	0	1	0	0	0	0	0	0
District of Columbia:									
Washington	528,000	0	11	12	0	0	4	0	3
Virginia:									
Lynchburg	[2] 38,493	0	2	3	0	0	0	4	0
Norfolk	174,000	0	2	5	0	0	1	0	2
Richmond	189,000	0	18	18	0	0	0	0	2
Roanoke	61,900	0	5	6	0	0	1	1	0
West Virginia:									
Charleston	50,700	0	1	0	0	0	0	0	0
Wheeling	[1] 56,208	0	1	0	3	1	1	2	2
North Carolina:									
Raleigh	[1] 30,371	0	4	6	0	0	0	0	1
Wilmington	37,700	0	1	1	0	0	0	0	0
Winston-Salem	71,800	0	3	3	0	0	0	0	3
South Carolina:									
Charleston	74,100	0	1	1	8	0	0	0	2
Columbia	41,800	0	2	1	0	0	0	2	2
Greenville	[1] 27,311	-------	2	-------	-------	-------	-------	-------	-------
Georgia:									
Atlanta	(3)	0	9	2	26	3	0	0	3
Brunswick	[1] 16,809	0	0	0	0	0	0	0	0
Savannah	94,900	0	2	3	4	0	0	1	2
Florida:									
Miami	[2] 131,286	0	2	1	0	0	0	0	0
St. Petersburg	[2] 47,629	-------	0	-------	-------	0	-------	-------	0
Tampa	102,000	0	1	4	0	0	0	0	3

[1] Estimated, July 1, 1925. [2] No estimate made. [3] Special census.

City reports for week ended September 29, 1928—Continued

Division, State, and city	Population July 1, 1926, estimated	Chicken pox, cases reported	Diphtheria		Influenza		Measles, cases reported	Mumps, cases reported	Pneumonia, deaths reported
			Cases, estimated expectancy	Cases reported	Cases reported	Deaths reported			
EAST SOUTH CENTRAL									
Kentucky:									
Covington	58,500	0	1	1	0	0	0	0	1
Louisville	311,000	0	6	8	0	0	0	1	7
Tennessee:									
Memphis	177,000	2	5	6	0	0	0	0	6
Nashville	137,000	0	5	6	0	0	0	0	3
Alabama:									
Birmingham	211,000	0	7	3	1	0	0	1	5
Mobile	66,800	0	1	1	0	1	0	0	1
Montgomery	47,000	0	3	6	9	----	0	0	----
WEST SOUTH CENTRAL									
Arkansas:									
Fort Smith	[1] 31,643	0	0	0	0	----	1	0	----
Little Rock	75,900	0	1	0	0	0	0	0	2
Louisiana:									
New Orleans	419,000	0	7	11	7	7	0	0	8
Shreveport	59,500	0	1	1	0	0	0	0	1
Oklahoma:									
Oklahoma City	[2]	0	3	15	4	0	0	0	1
Tulsa	133,000	0	2	5	0	----	0	0	----
Texas:									
Dallas	203,000	1	8	4	0	0	0	0	3
Fort Worth	159,000	0	3	1	0	0	0	0	0
Galveston	49,100	0	0	0	0	0	0	0	1
Houston	[1] 164,954	0	4	10	0	0	1	0	4
San Antonio	205,000	0	2	1	0	0	0	0	
MOUNTAIN									
Montana:									
Billings	[1] 17,971	1	0	0	0	0	0	0	0
Great Falls	[1] 29,883	1	0	0	0	0	1	0	0
Helena	[1] 12,037	0	0	0	0	0	0	0	0
Missoula	[1] 12,668	0	1	0	0	0	0	0	1
Idaho:									
Boise	[1] 23,042	1	1	1	0	0	0	0	0
Colorado:									
Denver	285,000	----	18	----	----	----	----	----	----
Pueblo	43,900	0	2	1	0	0	0	0	1
New Mexico:									
Albuquerque	[1] 21,000	0	0	0	0	0	0	0	0
Utah:									
Salt Lake City	133,000	7	4	2	0	0	0	10	0
Nevada:									
Reno	[1] 12,665	0	0	0	0	0	0	0	0
PACIFIC									
Washington:									
Seattle	[2]	8	5	5	0	----	1	2	----
Spokane	109,000	8	2	0	0	----	9	0	----
Tacoma	106,000	2	4	0	0	0	1	4	2
Oregon:									
Portland	[1] 282,383	7	7	8	0	0	1	1	1
California:									
Los Angeles	[2]	9	32	20	11	5	5	7	13
Sacramento	73,400	0	2	1	0	0	0	3	0
San Francisco	567,000	11	16	2	2	2	0	0	4

[1] Estimated, July 1, 1925.

[2] No estimate made.

City reports for week ended September 29, 1928—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
NEW ENGLAND											
Maine:											
Portland	1	1	0	0	0	2	3	1	0	1	24
New Hampshire:											
Concord	0	0	0	0	0	1	0	0	0	0	12
Vermont:											
Barre	0	0	0	0	0	1	0	0	0	0	3
Burlington	0	1	0	0	0	0	0	0	0	0	4
Massachusetts:											
Boston	23	23	0	0	0	13	3	0	0	18	168
Fall River	1	1	0	0	0	2	1	1	0	0	25
Springfield	3	4	0	0	0	1	0	0	0	1	20
Worcester	5	3	0	0	0	2	0	0	0	9	46
Rhode Island:											
Pawtucket	1	0	0	0	0	0	0	0	0	0	17
Providence	3	2	0	0	0	3	2	1	0	0	50
Connecticut:											
Bridgeport	2	0	0	0	0	0	0	0	0	1	20
Hartford	2	-------	0	-------	-------	-------	0	-------	-------	-------	-------
New Haven	2	-------	0	-------	-------	-------	2	-------	-------	-------	-------
MIDDLE ATLANTIC											
New York:											
Buffalo	9	6	0	0	0	16	1	1	1	24	138
New York	45	32	0	0	0	84	38	38	4	57	1,221
Rochester	3	3	0	0	0	0	2	2	0	2	60
Syracuse	5	1	0	0	0	3	1	0	0	8	60
New Jersey:											
Camden	2	2	0	0	0	0	2	0	0	6	24
Newark	6	3	0	0	0	2	2	2	1	17	88
Trenton	1	0	0	0	0	6	0	[1]2	[1]1	4	35
Pennsylvania:											
Philadelphia	31	10	0	0	0	33	14	7	2	66	387
Pittsburgh	21	18	0	0	0	8	3	2	0	3	138
Reading	0	2	0	0	0	1	0	0	0	10	28
EAST NORTH CENTRAL											
Ohio:											
Cincinnati	7	13	0	1	0	15	2	2	1	3	146
Cleveland	17	8	0	0	0	18	3	1	0	52	167
Columbus	4	6	0	0	0	4	1	0	0	4	61
Toledo	6	2	0	0	0	6	2	2	1	11	57
Indiana:											
Fort Wayne	1	1	0	0	0	2	1	2	0	0	34
Indianapolis	6	11	0	0	0	4	2	3	0	8	81
South Bend	2	0	0	0	0	2	0	0	0	2	28
Terre Haute	1	0	0	0	0	0	1	0	0	0	17
Illinois:											
Chicago	48	37	0	0	0	45	8	9	0	41	648
Springfield	1	0	0	0	0	0	0	1	0	0	17
Michigan:											
Detroit	38	40	1	1	0	22	6	1	0	98	267
Flint	8	12	0	0	0	1	1	0	0	5	30
Grand Rapids	5	3	0	0	0	3	1	1	0	1	31
Wisconsin:											
Kenosha	0	0	0	0	0	0	0	0	0	0	10
Milwaukee	13	20	0	0	0	7	1	1	0	54	100
Racine	3	0	0	0	0	1	0	0	0	15	7
Superior	1	2	0	0	0	1	0	0	0	0	12
WEST NORTH CENTRAL											
Minnesota:											
Duluth	5	6	0	0	0	0	0	0	0	1	24
Minneapolis	26	10	1	0	0	6	1	0	0	6	72
St. Paul	10	6	2	0	0	2	2	1	0	10	55

[1] Nonresident.

City reports for week ended September 29, 1928—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST NORTH CENTRAL—con.											
Iowa:											
Davenport	1	2	0	0			0	1		0	
Des Moines	4	4	0	0			0	0		0	29
Sioux City	1	2	0	0			1	0		2	
Waterloo	1	9	0	0			0	0		5	
Missouri:											
Kansas City	6	9	1	1	0	4	2	0	1	2	70
St. Joseph	2	1	0	0	0	0	0	1	0	1	21
St. Louis	17	2	0	0	0	14	5	9	2	8	188
North Dakota:											
Fargo	2	2	0	0	0	0	0	0	0	0	5
Grand Forks	1	0	0	0			0	0		0	
South Dakota:											
Aberdeen	1	0	0	1			0	0		0	
Sioux Falls	1	1	0	0			0	0		0	5
Nebraska:											
Omaha	2	4	0	0	0	1	0	2	0	3	53
Kansas:											
Topeka	2	6	0	0	0	0	0	1	0	9	16
Wichita	2	2	0	0	0	0	2	0	0	0	27
SOUTH ATLANTIC											
Delaware:											
Wilmington	1	0	0	0	0	1	0	0	0	1	20
Maryland:											
Baltimore	8	6	0	0	0	13	10	4	2	53	238
Cumberland	1	0	0	0	0	0	1	0	0	0	11
Frederick	0	0	0	0	0	0	0	0	0	2	6
District of Columbia:											
Washington	8	7	0	0	0	12	4	1	0	8	116
Virginia:											
Lynchburg	1	1	0	0	0	0	1	1	0	0	9
Norfolk	0	0	0	0	0	2	1	0	0	2	
Richmond	6	6	0	0	0	1	1	0	0	1	50
Roanoke	2	9	0	0	0	1	1	0	1	0	17
West Virginia:											
Charleston	2	1	0	0	0	1	1	0	0	1	13
Wheeling	3	1	0	0	0	0	1	0	1	0	17
North Carolina:											
Raleigh	2	0	0	0	0	1	1	0	0	1	15
Wilmington	1	0	0	0	0	0	0	0	0	0	7
Winston-Salem	2	4	0	0	0	2	2	6	1	3	29
South Carolina:											
Charleston	0	1	1	0	0	1	3	0	0	0	32
Columbia	0	1	0	0	0	0	0	1	0	0	8
Greenville	1		0				0				
Georgia:											
Atlanta	6	3	1	0	0	2	3	0	0	0	72
Brunswick	0	0	0	0	0	1	0	0	0	0	2
Savannah	0	1	0	0	0	3	2	1	0	4	32
Florida:											
Miami	1	0	0	0	0	1	0	1	0	1	23
St. Petersburg	0		0		0	0	0		0		3
Tampa	0	1	0	0	0	1	0	0	0	0	26
EAST SOUTH CENTRAL											
Kentucky:											
Covington	0	4	0	1	0	2	0	0	0	0	23
Louisville	3	15	0	0	0	7	5	2	0	0	104
Tennessee:											
Memphis	3	6	0	0	0	5	4	2	0	0	65
Nashville	3	1	0	0	0	0	5	3	1	0	44
Alabama:											
Birmingham	4	0	0	0	0	7	4	3	0	1	49
Mobile	0	2	0	0	0	0	1	0	0	0	21
Montgomery	1	2	0	0			0	1		0	

City reports for week ended September 29, 1928—Continued

Division, State, and city	Scarlet fever		Smallpox			Tuberculosis, deaths reported	Typhoid fever			Whooping cough, cases reported	Deaths, all causes
	Cases, estimated expectancy	Cases reported	Cases, estimated expectancy	Cases reported	Deaths reported		Cases, estimated expectancy	Cases reported	Deaths reported		
WEST SOUTH CENTRAL											
Arkansas:											
Fort Smith	0	1	0	0			0	1		0	
Little Rock	1	9	0	0	0	1	2	0	0	0	
Louisiana:											
New Orleans	3	4	0	0	0	11	3	3	0	6	134
Shreveport	1	1	0	1	0	1	1	0	0	0	29
Oklahoma:											
Oklahoma City	1	8	0	0	0	3	0	2	0	0	20
Tulsa	3	4	0	0			1	1		4	
Texas:											
Dallas	3	1	0	0	0	2	2	2	1	3	41
Forth Worth	1	3	0	0	0	0	1	2	1	1	28
Galveston	0	1	0	0	0	0	0	1	0	0	10
Houston	1	2	0	0	0	8	1	2	1	0	70
San Antonio	0	2	0	0	0	8	1	1	0	0	47
MOUNTAIN											
Montana:											
Billings	0	0	0	0	0	0	0	0	1	0	7
Great Falls	1	1	0	0	0	0	0	0	0	0	8
Helena	0	0	0	0	0	0	0	0	0	0	7
Missoula	0	1	0	0	0	1	0	0	0	0	6
Idaho:											
Boise	0	0	0	0	0	0	1	0	0	0	6
Colorado:											
Denver	5		0				3				
Pueblo	1	1	0	0	0	0	0	1	0	0	6
New Mexico:											
Albuquerque	0	3	0	0	0	4	1	2	1	1	13
Utah:											
Salt Lake City	1	3	0	1	0	3	2	1	1	4	29
Nevada:											
Reno	0	0	0	0	0	0	0	0	0	0	5
PACIFIC											
Washington:											
Seattle	7	1	1	1			1	2		14	
Spokane	4	8	2	2			1	0		0	
Tacoma	1	0	1	3	0	0	0	0	0	0	25
Oregon:											
Portland	6	3	4	8	0	1	2	0	0	0	74
California:											
Los Angeles	11	9	2	0	0	25	4	2	0	52	240
Sacramento	2	7	0	0	0	0	1	0	0	1	17
San Francisco	7	9	0	0	0	5	1	1	0	4	160

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
NEW ENGLAND									
Massachusetts:									
Boston	0	0	0	0	1	0	3	4	2
Fall River	0	0	0	0	0	0	0	2	0
Springfield	0	0	0	0	0	0	0	1	0
Worcester	0	0	0	0	0	0	0	1	0
Rhode Island:									
Providence	0	1	0	0	0	0	0	1	0
MIDDLE ATLANTIC									
New York:									
Buffalo	0	0	0	0	0	1	1	5	0
New York [1]	18	6	8	3	0	0	17	24	7
Rochester	0	0	0	0	0	0	1	1	1
Syracuse	0	0	0	0	0	0	1	0	1

[1] Typhus fever: 5 cases; 2 cases at New York, N. Y., 1 case at Savannah, Ga., 1 case at Birmingham, Ala., and 1 case at Mobile, Ala.

City reports for week ended September 29, 1928—Continued

Division, State, and city	Meningococcus meningitis		Lethargic encephalitis		Pellagra		Poliomyelitis (infantile paralysis)		
	Cases	Deaths	Cases	Deaths	Cases	Deaths	Cases, estimated expectancy	Cases	Deaths
MIDDLE ATLANTIC—continued									
Pennsylvania:									
Philadelphia	1	0	1	1	0	0	1	0	0
Pittsburgh	0	0	0	0	0	0	0	0	1
EAST NORTH CENTRAL									
Ohio:									
Cleveland	0	0	0	0	0	0	1	3	0
Columbus	0	0	0	0	0	0	0	2	2
Toledo	1	1	1	0	0	0	0	0	0
Indiana:									
Fort Wayne	1	1	0	0	0	0	0	0	0
Indianapolis	0	0	0	0	0	0	0	1	0
Illinois:									
Chicago [2]	8	4	0	0	1	1	4	0	0
Springfield	0	0	1	1	0	0	1	0	0
Michigan:									
Detroit	5	2	3	1	0	0	2	1	0
Wisconsin:									
Milwaukee	0	0	1	1	0	0	0	1	0
WEST NORTH CENTRAL									
Minnesota:									
Minneapolis	0	0	1	1	0	0	1	3	2
St. Paul	0	0	0	0	0	0	1	2	0
Missouri:									
Kansas City	1	0	0	0	0	0	1	0	0
St. Louis	1	2	0	0	0	0	0	0	0
South Dakota:									
Aberdeen	0	0	0	0	0	0	0	1	0
SOUTH ATLANTIC [3]									
Maryland:									
Baltimore	0	0	0	0	0	0	1	4	0
North Carolina:									
Winston-Salem	0	0	0	0	2	1	0	0	0
Georgia:									
Savannah [1 3]	0	0	0	0	3	1	0	0	0
Florida:									
Miami	0	0	0	0	0	1	0	0	0
EAST SOUTH CENTRAL									
Tennessee:									
Memphis	2	1	0	0	0	0	1	0	0
Nashville	0	0	1	0	0	0	1	0	0
Alabama: [1]									
Birmingham [1]	0	0	0	0	1	2	0	0	0
WEST SOUTH CENTRAL									
Louisiana:									
New Orleans	0	0	0	0	3	2	0	0	0
Texas:									
Dallas	0	0	0	0	1	1	0	0	0
Fort Worth	0	0	0	0	0	1	0	0	0
Houston	0	0	0	0	0	0	0	1	0
San Antonio	0	0	0	0	0	1	0	0	0
MOUNTAIN									
Montana:									
Missoula	0	0	0	0	0	0	0	1	0
PACIFIC									
Washington:									
Seattle	0	0	0	0	0	0	1	4	0
Spokane	0	0	0	0	0	0	1	1	0
Tacoma	0	0	0	0	0	0	0	1	1
Oregon:									
Portland	0	0	0	0	0	0	1	0	1
California:									
Los Angeles	2	0	0	0	0	0	1	1	0
San Francisco	2	1	0	0	1	0	1	0	1

[1] Typhus fever: 5 cases; 2 cases at New York, N. Y., 1 case at Savannah, Ga., 1 case at Birmingham, Ala., and 1 case at Mobile, Ala.
[2] Rabies (in man): 1 case and 1 death at Chicago, Ill.
[3] Dengue: 2 cases; 1 case at Charleston, S. C., and 1 case at Savannah, Ga.

The following table gives the rates per 100,000 population for 101 cities for the 5-week period ended September 29, 1928, compared with those for a like period ended October 1, 1927. The population figures used in computing the rates are approximate estimates as of July 1, 1928 and 1927, respectively, authoritative figures for many of the cities not being available. The 101 cities reporting cases had estimated aggregate populations of approximately 31,657,000 in 1928 and 31,050,000 in 1927. The 95 cities reporting deaths had nearly 30,961,000 estimated population in 1928 and nearly 30,370,000 in 1927. The number of cities included in each group and the estimated aggregate populations are shown in a separate table below.

Summary of weekly reports from cities, August 26 to September 29, 1928—Annual rates per 100,000 population compared with rates for the corresponding period of 1927 [1]

DIPHTHERIA CASE RATES

	Week ended—									
	Sept. 1, 1928	Sept. 3, 1927	Sept. 8, 1928	Sept. 10, 1927	Sept. 15, 1928	Sept. 17, 1927	Sept. 22, 1928	Sept. 24, 1927	Sept. 29, 1928	Oct. 1, 1927
101 cities	[2] 56	[3] 84	51	94	[4] 74	101	[3] 79	103	[4] 89	129
New England	37	88	34	93	87	53	67	91	[6] 71	109
Middle Atlantic	58	77	49	90	57	105	62	95	72	123
East North Central	[3] 61	87	51	90	67	82	92	105	97	129
West North Central	51	69	70	63	97	125	92	87	76	123
South Atlantic	67	[3] 89	47	108	[4] 103	112	[3] 85	105	[3] 136	164
East South Central	40	51	30	106	125	117	160	81	155	66
West South Central	100	161	76	149	140	136	92	203	108	194
Mountain	44	117	53	152	35	224	62	233	[7] 71	188
Pacific	20	73	49	91	49	91	54	76	72	120

MEASLES CASE RATES

101 cities	[3] 21	[3] 21	19	20	[4] 18	20	[3] 18	27	[3] 19	25
New England	90	58	55	63	39	30	48	40	[6] 66	53
Middle Atlantic	16	18	18	16	15	14	15	30	10	33
East North Central	[3] 28	11	24	15	24	18	20	18	22	13
West North Central	4	16	2	10	14	28	18	20	14	6
South Atlantic	4	[3] 18	5	14	[4] 11	14	[3] 16	36	[3] 14	29
East South Central	10	10	0	10	10	10	5	15	0	20
West South Central	0	41	4	17	0	17	4	0	8	4
Mountain	18	9	35	36	44	45	0	45	[7] 18	0
Pacific	13	42	28	34	13	44	10	52	41	47

SCARLET FEVER CASE RATES

101 cities	[3] 32	[3] 67	37	52	[4] 58	69	[3] 63	67	[3] 77	83
New England	64	60	46	53	78	102	101	123	[6] 93	102
Middle Atlantic	14	38	18	30	28	46	24	42	38	59
East North Central	[3] 32	81	44	65	88	89	91	99	100	101
West North Central	55	69	39	91	68	87	103	59	115	79
South Atlantic	30	[3] 60	49	60	[4] 52	78	[3] 67	106	[3] 74	106
East South Central	95	76	60	96	100	46	65	46	150	117
West South Central	44	58	56	45	44	41	28	50	84	103
Mountain	35	63	27	54	27	99	53	152	[7] 106	36
Pacific	31	34	59	31	64	55	77	71	87	76

[1] The figures given in this table are rates per 100,000 population, annual basis, and not the number of cases reported. Populations used are estimated as of July 1, 1928 and 1927, respectively.
[2] South Bend, Ind., not included.
[3] Greenville, S. C., not included.
[4] Lynchburg, Va., not included.
[5] Hartford, Conn., New Haven, Conn., Greenville, S. C., and Denver, Colo., not included.
[6] Hartford, Conn., and New Haven, Conn., not included.
[7] Denver, Colo., not included.

Summary of weekly reports from cities, August 26 to September 29, 1928—Annual rates per 100,000 population compared with rates for the corresponding period of 1927—Continued

SMALLPOX CASE RATES

	Week ended—									
	Sept. 1, 1928	Sept. 3, 1927	Sept. 8, 1928	Sept. 10, 1927	Sept. 15, 1928	Sept. 17, 1927	Sept. 22, 1928	Sept. 24, 1927	Sept. 29, 1928	Oct. 1, 1927
101 cities	[3] 0	[3] 4	1	4	[4] 1	5	[3] 1	6	[3] 2	4
New England	0	0	0	0	0	0	0	0	[5] 0	0
Middle Atlantic	0	0	0	0	0	0	0	0	0	0
East North Central	[3] 1	7	1	3	0	0	1	1	1	1
West North Central	0	2	4	12	4	22	4	8	2	12
South Atlantic	0	[3] 0	0	2	[4] 0	4	[3] 0	0	[3] 0	4
East South Central	0	0	0	10	0	0	0	10	5	0
West South Central	0	0	0	4	4	4	4	0	4	8
Mountain	0	36	9	9	9	27	0	161	[7] 18	54
Pacific	5	18	8	13	3	37	5	21	15	24

TYPHOID FEVER CASE RATES

101 cities	[3] 29	[3] 32	24	30	[4] 28	33	[3] 27	28	[5] 23	19
New England	23	21	16	40	14	47	21	63	[6] 8	12
Middle Atlantic	18	28	25	27	29	37	23	24	26	18
East North Central	[3] 15	15	13	7	14	16	16	10	14	8
West North Central	39	10	19	32	25	24	31	14	27	20
South Atlantic	44	[5] 71	33	58	[4] 40	31	[3] 30	45	[3] 25	20
East South Central	135	183	80	112	100	152	95	86	55	117
West South Central	72	54	28	74	28	37	68	70	40	17
Mountain	44	54	80	63	18	36	27	36	[7] 35	36
Pacific	26	8	13	8	38	16	18	13	13	18

INFLUENZA DEATH RATES

95 cities	[3] 3	[3] 4	3	4	[4] 5	5	[3] 4	3	[3] 6	6
New England	0	2	0	5	0	0	2	0	[5] 5	0
Middle Atlantic	3	3	2	3	4	4	5	2	2	4
East North Central	[3] 3	5	2	4	5	2	4	1	3	5
West North Central	2	4	2	0	10	4	2	2	2	8
South Atlantic	4	[5] 7	9	5	[4] 7	9	[3] 4	11	[5] 7	4
East South Central	5	5	16	11	16	0	10	11	5	27
West South Central	4	13	8	13	8	17	4	8	29	21
Mountain	18	18	0	9	0	9	0	0	[7] 0	27
Pacific	3	0	7	7	3	10	0	0	24	7

PNEUMONIA DEATH RATES

95 cities	[3] 55	[3] 56	57	62	[4] 63	60	[3] 66	58	[5] 66	56
New England	32	49	48	65	62	40	76	70	[6] 60	58
Middle Atlantic	60	72	56	66	69	60	74	69	75	62
East North Central	[3] 50	51	60	59	64	53	59	44	51	41
West North Central	31	23	22	43	43	46	41	25	41	33
South Atlantic	72	[5] 42	70	49	[4] 64	76	[3] 85	65	[5] 78	65
East South Central	105	48	78	117	37	106	47	85	120	90
West South Central	66	81	57	64	70	59	12	68	98	93
Mountain	53	54	44	90	44	99	71	54	[7] 35	81
Pacific	41	55	78	52	61	86	91	66	64	45

[3] South Bend, Ind., not included.
[5] Greenville, S. C., not included.
[4] Lynchburg, Va., not included.
[6] Hartford, Conn., New Haven, Conn., Greenville, S. C., and Denver, Colo., not included.
[6] Hartford, Conn., and New Haven, Conn., not included.
[7] Denver, Colo., not included.

Number of cities included in summary of weekly reports, and aggregate population of cities of each group, approximated as of July 1, 1928 and 1927, respectively

Group of cities	Number of cities reporting cases	Number of cities reporting deaths	Aggregate population of cities reporting cases		Aggregate population of cities reporting deaths	
			1928	1927	1928	1927
Total	101	95	31,657,000	31,050,300	30,960,700	30,369,500
New England	12	12	2,274,400	2,242,700	2,274,400	2,242,700
Middle Atlantic	10	10	10,732,400	10,594,700	10,732,400	10,594,700
East North Central	16	16	7,991,400	7,820,700	7,991,400	7,820,700
West North Central	12	10	2,683,500	2,634,500	2,566,400	2,518,500
South Atlantic	21	21	2,981,900	2,890,700	2,981,900	2,890,700
East South Central	7	6	1,048,300	1,028,300	1,000,100	980,700
West South Central	8	7	1,307,600	1,260,700	1,274,100	1,227,800
Mountain	9	9	591,100	581,600	591,100	581,600
Pacific	6	4	2,046,400	1,996,400	1,548,900	1,512,100

FOREIGN AND INSULAR

THE FAR EAST

Report for the week ended September 22, 1928.—The following report for the week ended September 22, 1928, was transmitted by the Eastern Bureau of the Health Section of the Secretariat of the League of Nations, located at Singapore, to the headquarters at Geneva.

Plague, cholera, or smallpox was reported at the following ports:

PLAGUE

India.—Bassein, Rangoon.
Madagascar.—Tamatave.

CHOLERA

India.—Calcutta, Madras, Negapatam, Tuticorin.
Indo-China.—Pnompenh.
Siam.—Bangkok.
Kwantung.—Dairen.

SMALLPOX

India.—Bombay, Madras, Negapatam, Calcutta.
French India.—Pondicherry.
Indo-China.—Saigon, Pnompenh.
China.—Hong Kong.
Straits Settlements.—Singapore.
Kwantung.—Dairen.
Dutch East Indies.—Batavia, Pontianak, Samarinda, Surabaya.

ALGERIA

Oran—Plague—Under date of October 12, 1928, the occurrence of one case of plague was reported at Oran, Algeria.

CANADA

Ontario Province—Communicable diseases—Comparative—Five weeks ended September 29, 1928.—The Provincial Board of Health of Ontario, Canada, reports cases and deaths from communicable diseases for the five weeks ended September 29, 1928, and the corresponding weeks of 1927, as given in the accompanying table.

Smallpox.—Cases of smallpox were reported from the following municipalities: Bradford, 7; Ottawa, 1; Kingston, 3; Portland Township, 8; Chaffey, 1; Ryerson, 2; Clarence Township, 8; York Township, 1.

Disease	Aug. 26–Sept. 29, 1928		Aug. 28–Oct. 1, 1927	
	Cases	Deaths	Cases	Deaths
Cerebrospinal meningitis	3		3	3
Chancroid	1		1	
Chicken pox	128		150	
Conjunctivitis	4			
Diarrhea			13	4
Diphtheria	238	10	246	23
Dysentery		5		5

Disease	Aug. 26–Sept. 29, 1928		Aug. 28–Oct. 1, 1927	
	Cases	Deaths	Cases	Deaths
Erysipelas			1	
German measles	3		10	
Goiter			1	
Gonorrhea	269		144	
Influenza		6		2
Lethargic encephalitis	1	1		
Measles	87	1	109	1
Mumps	169	1	118	
Paratyphoid fever	1			
Pneumonia		75		53
Poliomyelitis	27	2	10	1
Puerperal septicemia		1		
Scarlet fever	164	3	165	
Smallpox	31		50	
Syphilis	161	1	129	
Tuberculosis	127	55	119	59
Typhoid fever	138	4	67	1
Whooping cough	490	7	288	2

Quebec—Communicable diseases—Week ended September 29, 1928.—The Provincial Bureau of Health of Quebec, Canada, reports cases of certain communicable diseases for the week ended September 29, 1928, as follows:

Disease	Cases	Disease	Cases
Chicken pox	5	Poliomyelitis	1
Diphtheria	41	Scarlet fever	59
German measles	1	Smallpox	14
Influenza	16	Tuberculosis	34
Measles	2	Typhoid fever	25
Mumps	6	Whooping cough	3

CUBA

Provinces—Communicable diseases—July 1–August 25, 1928.—During the eight weeks from July 1 to August 25, 1928, cases of communicable diseases were reported from the Provinces of Cuba as follows:

Disease	Pinar del Rio	Habana	Matanzas	Santa Clara	Camaguey	Oriente	Total
Cerebrospinal meningitis		1					1
Chicken pox		10	1	3	2	12	28
Diphtheria	3	30	5	7	9	6	60
Malaria	4	34	1	8	67	147	261
Measles	10	140	2	5			157
Paratyphoid fever	5	4	15	20	8	26	78
Poliomyelitis				1	1		2
Scarlet fever	15	1					16
Tetanus (infantile)	1			1			2
Typhoid fever	37	120	75	131	50	53	466

HAWAII TERRITORY

Honokaa, Hawaii—Plague—Plague-infected rodents.—According to information dated October 10, 1928, one death from plague was reported at Honokaa, Island of Hawaii, on September 11 and one on September 17, 1928. One plague-infected rodent was reported at Honokaa on September 12 and three plague-infected rodents were reported on September 18, 1928.

JAMAICA

Smallpox (alastrim)—August 26–September 29, 1928.—During the five weeks ended September 29, 1928, smallpox (reported as alastrim) was notified in the Island of Jamaica as follows: For the Island outside of the city of Kingston, one case for week ended September 15, 1928.

Other communicable diseases.—Cases of other communicable diseases were reported in the Island of Jamaica for the five weeks ended September 29, 1928, as follows:

Disease	Kingston	Other localities	Disease	Kingston	Other localities
Chicken pox	1	10	Leprosy		5
Diphtheria		1	Tuberculosis (pulmonary)	38	72
Dysentery		8	Typhoid fever	16	92

SIAM

Dhannapuri—Cholera.—Three cases of cholera, with three deaths, were reported in Dhannapuri, Siam, during the week ended September 22, 1928.

Songkla—Cholera—Correction.—According to information dated October 1, 1928, the report of eight cases of cholera, with six deaths, at Songkla, Siam, for the week ended September 8, 1928, was incorrect.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER

From medical officers of the Public Health Service, American consuls, health section of the League of Nations, and other sources. The reports contained in the following table must not be considered as complete or final as regards either the list of countries included or the figures for the particular countries for which reports are given:

CHOLERA

[C indicates cases; D, deaths; P, present]

Place		Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Apr. 8–May 5, 1928	May 6–June 2, 1928	June 3–30, 1928	July 1–28, 1928	Week ended— August, 1928 4	11	18	25	September, 1928 1	8	15	22
Ceylon: Colombo	C							1								
	D							1								
China:																
Canton	C			2		1	2	8		2	2			1		
	D			2		1	2	8		1	1			1		
Kwantung—Dairen	C													3		
	D													1		
Shanghai	C								2	1	P		1	1		
	D															
Swatow	C						3	7								
Dutch East Indies: Java—Batavia	C										1					
India	C	12,391	13,236	21,279	32,564	30,177	31,346	44,240	12,469	15,341	13,109					
	D	6,750	7,282	11,877	20,432	20,162	20,114	23,216	6,443	7,473	6,800					
Bassein	D	1	2	51	41	40	8									
Bombay	C	1	1	3		1		6	2	3	2	2				
	D		1	3				11		1	2	2	2	2		
Calcutta	C	203	341	664	446	552	462	206	14	25	29	25	17			
	D	112	241	442	428	410	323	133	8	11	18	14	7	10	13	
Madras	C	2	14	10	22	27	29	72	111	216	118	110	65	49		
	D	4	18	4	18	16	21	31	56	99	66	50	34	33	15	6
Madras Presidency	C	4,681	2,961	1,483		1,314	878									
	D	2,600	1,618	812		675	460									
Moulmein	D					1										
Negapatam	C	4	4													1
	D	6	4	2			13			1		2		1	5	
Rangoon	C	6	29	22	23	7	14	1	8	4	1					
	D	2	18	16	15	5	9	1	5	2	1				1	
Tuticorin	C			10	110					1						1
	D			9	71											
Vizagapatam	D							7	6	12	13		5			

India (French):																
Chandernagor	C	6	5	7				2	1	3	3			2	1	
	D	1	5	6				1	1	1	1			1	1	
Karikal	C	32	6		1				1	6	11	12	14	13	11	
	D	19	5		1				1	4	10	6	8	9	7	
Pondicherry Province	C	12	33	1	8			3	8	17	44	45	49	20	35	
	D	10	19	1	8			3	6	11	25	18	23	17	18	
Indo-China (see also table below):																
Pnompenh	C							5			1	1	1			2
	D							5			1	1	1			1
Saigon	C	4	16	96	116	15	6	2						2		
	D	1	8	59	76	9	1	1						1		
Tourane	C						1									
	D						1									
Japan:																
Osaka [1]																
Kwangchow-Wan (see table below).																
Persian Gulf:																
Island of Henjam	C							1								
Jask	C							1								
Philippine Islands:																
Bulacan Province—																
Malolos	C							1								
Paombong	C										1					
Cagayan Province	C									1						
	D									2						
Ballesteros	C							1								
	D							1								
Pamplona	C						1									
	D						1									
Sanchez-Mira	C						4									
	D						2									
Cebu (port)	C							1								
Ilocos Norte Province	C							1								
	D							1								
Manila	C							4	1							
Pangasinan Province—																
Bayambang	C							1								
	D							1								
Surigao Province—																
Surigao	C							1		1	2					
	D							1		1	1					
Siam	C	200	295	291	349	202	203	163	9	16	3	12				
	D	139	214	218	234	127	144	123	4	4	2	8				
Ayudhaya	C						2		1	15	2	11			1	
	D						1			16	2	8			1	
Bangkok	C	101	60	60	74	50	7	9	1	1	1	1	1	1		3
	D	66	36	33	35	26	4	3								1
Dhannapuri	C														3	
	D														3	
Trad	C						1									

[1] 1 case of cholera reported at Osaka, Japan, Oct. 4, 1928.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

CHOLERA—Continued

[C indicates cases; D, deaths; P, present]

Place		Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Apr. 8–May 5, 1928	May 6–June 2, 1928	June 3–30, 1928	July 1–28, 1928	Week ended— August, 1928 4	11	18	25	September, 1928 1	8	15	22
Straits Settlements: Singapore	C	3		2	1											
	D	1		2	1											
On vessel:																
S. S. Hawaii Maru at Singapore from Saigon, French Indo-China	C			11												
	D			7												
S. S. Kambangan at Batavia from Jeddah via Sabang and Palembang	C										1					
S. S. Tairea at Penang from Madras via Nagapatam	C											P				

Place		January March, 1928	April, 1928	May, 1928	June, 1928 1–10	11–20	21–30	July, 1928 1–10	11–20	21–31	August, 1928 1–10	11–20	21–31	September, 1928 1–10	11–20
Indo-China (French) (see also table above):															
Annam	C	389	46	43	22	8	9	8	5	3		4	7	2	2
Cambodia	C	312	196	101	28	82	111	92	25	38		19	19	15	
Cochin-China	C	1,407	933	404	143	109	77	65	55	33		13	15	15	9
Laos	C														
Tonkin	C	1	6	26	8	2	1	5	1	1		2			
Kwangchow-Wan	C			16					1				1		

PLAGUE

Place		Jan. 15-Feb. 11, 1928	Feb. 12-Mar. 10, 1928	Mar. 11-Apr. 7, 1928	Apr. 8-May 5, 1928	May 6-June 2, 1928	June 3-30, 1928	July 1-28, 1928	Week ended— August, 1928 4	11	18	25	September, 1928 1	8	15	22	29
Algeria (see also table below):																	
Algiers	C				1												
Oran	C					1	2										
Arabia: Aden	C	178	343	651	224	7	1										
	D	104	206	529	191	9	1										
Plague-infected rats		P	P														
Argentina:																	
Avellaneda	C					1											
	D					1											
Buenos Aires	C	2				6	1										
	D					3	2										
Cordoba Province	C				5												
Entre Rios	C						5										
Loreto	C					3											
Rosario	C	4	1			1		1									
Santa Fe	C						9	1									
Santiago del Estero	C		1				10	1									7
Suardi	C					2											
Azores: St. Michaels Island	C	8	3	3	5	1	1										
	D	4	1	2	2	1	1										
Bolivia: Valle Grande	C								P								
Brazil:																	
Bahia	C	5	24	28	6	3											
	D	4	19	21	6	3											
Porto Alegre	C		1														
Rio de Janeiro	C	4	3	3													
	D	1	2	3													
Plague-infected rats		1															
British East Africa (see also table below):																	
Tanganyiki	C	2	3					6				1	4				
	D	2	3		10			29				1	4				
Uganda	C	23	13			84	105										
	D	18	10			70	85										
Canary Islands:																	
Arrecife	C					1											
	D					1											
Lanzarote Village	C					1											
Las Palmas	C	1	1	4												2	
	D	1	1													1	
Palma Island	C											7					
	D											3					
Teneriffe	C		10											5			
	D		4											3			

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Apr. 8–May 5, 1928	May 6–June 2, 1928	June 3–30, 1928	July 1–28, 1928	Week ended— August, 1928 4	11	18	25	September, 1928 1	8	15	22	29
Ceylon: Colombo	C	3	11	7	1	4	2						1	1	1		
	D	2	6	5	1	2	2						1	1	1		
Plague-infected rats		5	6														
China:																	
Amoy	C					5		P									
Hong Kong	C				2		1	1									
	D						1										
Mongolia:																	
Tungliao	C													30	130	60	
Urga	C														P		
Dutch East Indies:																	
Celebes—Makassar	C	5	1														
	D	5	1														
Java	D	737	454														
Batavia and West Java	C	137	103	80	47	65	61	32	10	13	12	11					
	D	135	103	80	47	65	61	32	10	13	12	11					
Plague-infected rats				3	7	9	4	2			2						
East Java and Madura	C	7		4	4			1	1								
	D	7		4	4			1	1								
Kedoe Residency	C				4			P									
Surabaya Residency	C		1	1	1												
	D			1	1												
Ecuador (see also table below):																	
Alausi	C					1											
Egypt:																	
Alexandria	C	2	1			1		2	1	1			1	1			
	D	2	1			2								1			
Amrieh District	C										13	13	4	1	1	5	1
	D												2	2		1	
Assiout Province	C							2			2		1				
	D							1					1				
Beheira	C								1	1				3		2	
	D													1		1	
Beni-Suef	C				12	79	25	25	1	1	1	3	5	6	5		
	D				3	27	9	5				2	1	4			
Girga	C												1	3	1		
	D												1	3			

Maghagha District

Maghagha District	C				1													
	D				1													
Menufia	C					11												
	D					2												
Minieh Province	C				48	76	76	13										
	D				9	17	24	3										
Port Said	C							1	1		3	1						
	D												1					
Sidi Barani	C							12	10									
	D							8	1									
Suez	C	4	13	14	5	3												
	D	2	9		13	1					1	1						
Plague-infected rats				2														
Tanta	C					1		2	1	1								
	D					1												
Greece:																		
Athens and Piræus	C																	
Corfu	C						15		1				1				2	2
	D						3											
Patras	C							1		1					1			
	D							1										
Hawaii Territory: Hawaii—																		
Hamakua District—																		
Hamakua	D		1															
Plague-infected rats																		
Honokaa	D					1				1						1	1	
Plague-infected rats																1	3	
Kukuihaele	D					1				1								
Plague-infected rats								1										
Kukaiau—Plague-infected rats										3								
Paauilo	D							1		1								
India	C	12,652	23,174	26,079	18,518	3,272	367	587	267	353	547							
	D	8,521	16,998	20,907	17,074	3,183	345	340	167	249	293							
Bassein	D	8	12	22	13	8	14	3					1					
Bombay	C	14	33	69	43	39	14	1	2	3	2							
	D	9	33	61	69	38	8	1	2	2	1	1		1				
Calcutta	D	1		2							2			1				
Madras Presidency	C	452	271	62	21	12	54	123	56	31	71							
	D	256	212	48	12	6	25	51	19	25	37							
Rangoon	C	35	48	30	16	14	31	43	7	9	2	10	4					
	D	30	43	26	14	15	28	39	7	8	2	9	3	7	1			
Vizagapatam	D						1											
Indo-China (see also table below):																		
Pnompenh	C							4			1		1	3	2			
	D							4			1		1	2	1			
Saigon	C						5					1						
	D						1					1						
Plague-infected rats							2											
Iraq:																		
Baghdad	C	4	2	5	11	13	9	1							1	3		
	D	2	2	5	6	3	4									2		
Plague-infected rats					4	3												
Dulaim Liwa	C	1			1													

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

PLAGUE—Continued

[C indicates cases; D, deaths; P, present]

Place		Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Apr. 8–May 5, 1928	May 6–June 2, 1928	June 3–30, 1928	July 1–28, 1928	Week ended— August, 1928 11	18	25	September, 1928 1	8	15	22	29
Kwangchow-Wan (see table below).																
Madagascar (see also table below):																
Tamatave	C					1	20	3	2	4	1	1	1	2	3	3
	D						8	7						1	2	1
Nigeria (see also table below):																
Lagos	C	10	8	7	17	28	43	53	14	12	15	10	14	9	14	23
	D	11	8	6	18	28	42	52	15	11	16	10	14	9	14	22
Plague-infected rats					8	55	57	23								
Paraguay: Ascuncion	C						5									
	D						2	2								
Peru (see also table below).																
Portugal: Lisbon	C						1									
Senegal (see abso table below):																
Thies and vicinity	C			8		72	52									
	D			4		40	40									
Siam	C	20	42	33	27	15	6	10								
	D	12	36	30	13	11	7	8								
Ayudhaya	C						2	2								
	D						1	2								
Bangkok	C	2	1	1	4											
	D	2	1	1	2											
Nagara	C					1	2									
Straits Settlements:																
Ipoh	C														2	
	D														2	
Singapore	C	1	3	1												
	D	1	2	1												
Syria (see also table below):																
Beirut	C						1	5								
Tunisia: Bengardane region	C			8												
	D			6												
Turkey: Adalia	C							1								
Union of South Africa:																
Cape Province																

Union of South Africa:																	
Cape Province	C	1															
	D	1															
Orange Free State	C	5	5	5				P	P								
	D	4	1	5													
Union of Socialist Soviet Republics:																	
Astrakhan—																	
Axary District	C						3										
	D						2										
Kirghiz District	D															54	
Krasnoiarsk District	D												1				
Chita District	C													1			
Venezuela: State of Miranda—Tacata and Cua	C		P														
On vessel: S. S. Tymeric, at Barbados, from New Orleans	C				1												

Place		January–March, 1928	April, 1928	May, 1928	June, 1928	July, 1928	August, 1928	September, 1928
Algeria (see also table above):								
Algiers	C			1				
British East Africa (see also table above):								
Kenya	C	65	17	11	58	97	144	
	D		5				34	
Ecuador: Guayaquil	C	20		1	5			
	D	8			2			
Plague-infected rats		75		1	4	7		
Indo-China (see also table above)	C	12	9	16	11	7	2	
Kwangchow-Wan	C	18	17	10				
Madagascar (see also table above)	C	940	95		104		45	
	D	854	90		94		40	
Ambositra Province	C	202	25	13		4		
	D	191	25	10		4		
Antisirabe Province	C	281	35	14	19	11		
	D	279	34	14	19	11		
Itasy Province	C	55	1					
	D	49	1					
Moramanga Province	C	56			4	2		
	D	55			4	2		
Tamatave	C			1	22	10		
	D				14	9		

Place		January–March, 1928	April, 1928	May, 1928	June, 1928	July, 1928	August, 1928	September, 1928
Tananarive Province	C	348	34	20	17	24		
	D	202	30	30	17	23		
Nigeria (see also table above)	C	41	18	30				
	D	41	17	30				
Peru	C	93		20	5	5		
	D	23		4	2	2		
Lima	C	6		4				
	D			2				
Senegal (see also table above)	C	30	81	216	151	230	43	
	D	17	40	115	91	164	32	
Baol	C				13	17	68	33
	D				7	10		19
Cayor	C					40	46	
	D					25	15	
Rufisque	C			17	29	18	2	
	D			9	22	7		
Thies	C		30	72	243	103	151	38
	D		23	40	174	64	119	31
Tivaouane	C		51	105	169	84	9	
	D		28	57	90	70		
Syria: Beirut (see also table above)	C				1	4		

PLAGUE RATS ON VESSELS

S. S. *Gyderore* at Landskrona, Sweden, from Rosario, via Canary Islands, January 22, 1928.
S. S. *Dryden* at Liverpool from La Plata River ports, January 20, 1928.
S. S. *Sicily* at Liverpool from Buenos Aires and Rosario, June 8, 1928, 7 plague-infected rats.

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX

[C indicates cases; D, deaths; P, present]

Place		Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Apr. 8–May 5, 1928	May 6–June 2, 1928	June 3–30, 1928	July 1–28, 1928	Week ended— August, 1928 4	11	18	25	September, 1928 1	8	15	22	29
Algeria	C	71	72	3	12												
	C	15	10	5	4	5	15	3			2						
Algiers	C	11	5	12	17	5	4	8	5								
Oran																	
Angola (see table below)	C		1				11		1				1				
Arabia: Aden	D								1								
Brazil (see also table below):																	
Pernambuco	D					1											
Rio de Janeiro	C			1				1									
	D			1													
British East Africa (see also table below):																	
Kenya—Mombasa	C				1												
Tanganyiki	D	5															
British South Africa:																	
Northern Rhodesia	C	233	207	67	628	195	15	48	53	188	6						
	D	23	42	9	51	17	1	5	2	9							
Southern Rhodesia	C	3	7	7	24	13	36	22			7	10					
	D		1		10		4	4									
Canada:																	
Alberta	C	27	27	47	12	44	9	3			4	21	6				
Calgary	C			1													
Edmonton	C	2	9	7	3			4						1			
British Columbia—Vancouver	C	26	10	17	24	11	4	11									
Manitoba	C	1			7	4	10	4									
Winnipeg	C	2															
New Brunswick	C		1			1	7		1	2	2						
Ontario	C	248	147	83	50	41	33	11	2		1	2	1	2			
Kingston	C	1			3			2				1				1	
Ottawa	C	68	22	26	4	6	1					1	1	5			
Toronto	C	20	14	9	11	12	3	1									
Quebec	C	26	54	112	83	78	81	62	5	9	5	8	9	7	9	3	14
Montreal	C	8	9	9	9	3	11	5			2		6	2	4		
Quebec	C	16	13	10	23	47	52	44	4	3	4	1	3	2	5		
Sherbrooke	C			3			4										

Saskatchewan	C	97	22	33	52	28	16		4	1		1		3			
Moose Jaw	C	11	13	7	3	1		1								2	
Regina	C			3	8	1	1										
Saskatoon	C	15	2													1	
Ceylon: Colombo	C	4	6	1													
China:	D	1		1													
Amoy	C		1	6	9	3											
Antung	C				3												
Canton	C		2	7	2	2											
Chefoo	C			P		P	P	P	P								
	D		1														
Foochow	C	P	P	P	P		P	P		P							
Hong Kong	C	2	7	32	25	30	14	11	6	3	6	4	2	3	2	2	
Manchuria—	D	2	4	19	26	23	19	5	5	1	5	5	1	1	5		
Chanchung	C	4			4	6		1									
Fushun	C						6	1		1	1				1		
	D							1									
Harbin	C	5	7	7	10	27	31	11									
Kwantung	C						14		1								
	D								1								
Dairen	C	15	13	15	16	35	48	21	1	1	1					1	
	D	8	7	8			20	12	1	1	1						
Port Arthur	C							1	1								
	D								1								
Mukden	C	4	21	1	4	3	6								2		
	D						1										
Pensihu	C						1										
	D						1										
South Manchuria Railway Zone	C						5										
Shanghai—																	
Foreigners only	C	5	6	7	3	11	7	2	1	1			1	1			
Including natives	D	11	19	9	9	19	11	10	1		1						
Tientsin	C	48	20	13	17	9	14	1									
Chosen (see table below).																	
Curacao (alastrim)	C	2	3					2									
Dominican Republic: Santo Domingo	C			2	1												
Dutch East Indies:																	
Balikpapan	C							7									
	D							2									
Belawan Deli	C						11	4	5	1	2	1		5	5		
	D						3	1	2	1					2		
Borneo—Pontianak	C		1						3		1	1	1	1	1	1	
Java—	D									1		1					
Batavia and West Java	C	4	2	5	1	2		2	2		4					1	
East Java and Madura	C	2	9		2		2	3	2								
	D		1		2			3								1	
Surabaya	C								1	3	2				3	1	
Sumatra—	D								1								
Medan	C	23	14	7	2	10	4	5	5	1	2	1					
	D	11	2	5	3	5		2	2	1							
Palembang	C							1									

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Apr. 8–May 5, 1928	May 6–June 2, 1928	June 3–30, 1928	July 1–28, 1928	Week ended— August, 1928 4	11	18	25	September, 1928 1	8	15	22	29
Ecuador (see table below).																	
Egypt	C	1	2	52	12	1											
	D			33	7	1											
Behera Province	C							1									
Cairo	C	1															
France (see table below).																	
Gold Coast (see table below).																	
Great Britain:																	
England and Wales	C	1,530	1,473	1,341	1,344	1,199	1,146	681	126	111	114	141	102	123	92	113	
Birmingham	C	44	3	1	1		2	1								1	
Bradford	C	24	12	19	14	17	10	2									
Bristol	C	3	4	12	17	10	2					2					
Cardiff	C			5	3	2											
Castleford	C		4	36	69	24	18	14	6	2	1	1	1	2	1	1	
Hull	C						1	24	6	2	3	4	6	3	1	3	
Leeds	C	3	9	14	1		8	1	1				4	1		1	
Liverpool	C		1														
London	C	4	14	17	42	25	93	19	3		5	1		2	3	3	
Manchester	C	25	8	14	8	5	1							3			
Newcastle-on-Tyne	C	27	12	9	4	12	6	28		1		1					
Nottingham	C	27	11	13	17	20	3	6		3	5	2	1	6	2	6	
Plymouth	C										6		1		1	1	
Sheffield	C	8	6	1	14	4	2	2			1				1	3	
Stoke-on-Trent	C	1	15	12	32	24	14	5	4	4							
Weymouth	C							1									
Scotland—																	
Arbroath	C									1	3			2	1		
Dundee	C												1				
Greece (see table below).																	
Hedjaz	C	35	115			6	14	18	1								
	D	23	46			2	1	6	1								
India	C	17,777	18,850	28,034	30,436	21,489	13,497	9,981	1,775	1,742	1,245						
	D	3,709	3,826	5,540	6,672	5,046	3,700	2,758	535	436	350						
Bassein	C	1			1												

Bombay	C	61	149	218	200	136	71	67	9	13	3	3	4	3	4	3	
	D	24	73	120	118	78	46	33	9	8	2	2	3	3	2	3	
Calcutta	C	58	71	134	171	130	61	52	10	3	3	6	4	5	3	1	
	D	34	50	104	130	101	50	35	9	1	3	4	3	4	3	1	
Karachi	C		1	1	2	3		3									
	D		1		1	1		2									
Madras	C	74	100	183	169	59	85	39	9	11	13	10	19	23	29	19	
	D	8	19	29	38	18	10	18	2	2	5	1	5	7		9	
Moulmein	C						1	9		3	3	3	4				
	D						1	6			2	2	1				
Negapatam	C	8	3		7	8	19	26	4	13	8	10	7	9	15		
	D	3			3	1	7	4		1	4	4	3	1	3		
Rangoon	C	275	377	320	167	36	30	7	1	1							
	D	64	104	102	79	13	6	4	1								
Tuticorin	C					3											
Vizagapatam	C	10	2	3	2	3	8	3			1			9	5		
	D	8				1	3	3			1				3		
India (French):																	
Chandernagor	C			5	5			1		2			4	5			
	D			1	1			1		1				2			
Pondicherry Province	C	47	9	18	36	32	13	12	4	13	13	32	24	18	32	5	
	D	47	9	18	36	23	13	12	4	11	2	28	31	14	28	5	
Indo-China (see also table below):																	
Pnompenh	C										2		4	8	3	4	
	D										2		3	5	3	4	
Saigon	C		3													1	
Iraq:																	
Baghdad	C	19	7	5	5	16	16	24		4	2	1	5	7	10	12	1
	D	11	4	4	3	6	10	15		1	1		2	5	3	7	1
Basra	C	1	7	5	4	3	2	6			2	2		1			6
	D			2	2	3	2	2			1	1		1			2
Italy:																	
Leghorn	C		1	1													
Palermo	C			5	10	6	10	4	6								
Rome and vicinity	C	3															
Ivory Coast (see table below).																	
Jamaica (outside Kingston) (alastrim)	C	5	10	13	4	2	3	1				1	1	1			
Japan:																	
Kobe	C					11											
Nagoya	C				6	2		1									
Osaka	C						4										
Tokyo City	C	4	4	15	8	2											
	D	1	2	1	1												
Tokyo prefecture (outside city)	C			24	1	1											
	D			1	2												
Yokahama	C				2	3											
	D					1											
Latvia (see table below).																	
Mauretania	C		P														
Mexico (see also table below):																	
Acapulco	C					2											
	D					2											

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Apr. 8–May 5, 1928	May 6–June 2, 1928	June 3–30, 1928	July 1–28, 1928	Week ended— August, 1928 4	11	18	25	September, 1928 1	8	15	22	29
Mexico (see also table below)—Continued.																	
Jalisco (State)	C		P	P	P		21										
Guadalajara	D		1	2	12	13	10	9	1	4		2	1		2		
Manzanillo	D			1													
Mazatlan	D					3	2				3						
Mexico City and surrounding territory	C	2	1		1	2		3			1	1				1	
	D						1					1	1				
Reynosa	C							1									
Saltillo	D					2	2										
Tampico	C		1														
Morocco (see table below).																	
Nigeria (see also table below):																	
Lagos	C			1			1										
Southern Provinces	C		7	93			51										
	D			35			12										
Palestine: Jerusalem	C	1															
	D	1															
Persia (see table below).																	
Poland	C	3	1	1	9	1	3	2									
	D				1												
Portugal (see also table below):																	
Lisbon	C	12	20	5	6	7	7	6		1							
	D		1					1		1							
Oporto	C				1												
Senegal (see also table below): Dakar	C		34	29	16	29	8										
	D			20	8	7											
Siam	C	35	12	28	10	8	3	1	3								
	D	4	3	4	3	1	1		2								
Bangkok	C				1												
	D					1											
Spain (see also table below): Valencia	C		1	2													
Straits Settlements: Singapore	C	1	1	1	3		1									1	
Sudan (Anglo-Egyptian)	C	85	109	332	160	168	206	144	31	78	78	65	56	35	10	51	30
	D	48	27	100	32	20	37	35	0	6	6	13	7	6	3	18	6

Place		January-March, 1928	April, 1928	May, 1928	June, 1928			July, 1928			August, 1928			September, 1928	
					1-10	11-20	21-30	1-10	11-20	21-31	1-10	11-20	21-31	1-10	11-20
Sudan (French) (see table below).															
Syria (see table below).															
Taiwan: Keelung	C						1								
Tunisia: Tunis	C	3	14	4	6	3	2	8	4	1			1		
Union of South Africa:															
Cape Province	C	P									P				
Natal	C	P	P	P			1								
Orange Free State	C	P		P		P	P	P							
Transvaal	C				P	P	P			P		P			
Union of Socialist Soviet Republics (see table below).															
Upper Volta	C		5	2	9					33		17			
	D									8					
Venezuela: Maracaibo	C	1													
	D	1	1							1					
On vessel:															
S. S. Arendskerk at Singapore, from Amoy, China	C			P											
S. S. Kashgar at Kobe, from Shanghai	C				P										
S. S. Ronna at Penang, from Negapatam	C					P									
S. S. Theseus, from Jeddah to Penang	C							1							
S. S. Tjileboet at Hong Kong, from Shanghai	C				P										
S. S. Yarmouth at Kingston, Jamaica, from Habana, Cuba	C			1											
S. S. Victoria at Nome, Alaska	C						8								
Indo-China (French) (see also table above)	C	426	35	79	47		36	8	3	15	44	21	6	27	29
Ivory Coast	C			7					4	5				2	
	D									2					
Senegal (see also table above)	C		51	20	23	14	2							4	
	D		7	9											
Dakar	C		11	24	4	1	3								
	D		8	7											
Sudan (French)	C	15	4	30	20				17				55		
	D			6									33		
Syria:															
Aleppo	C	1				1	2					4			
Beirut	C	75	9	7	1	7	2	4	1						
	D	2													
Damascus	C	14													

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

SMALLPOX—Continued

[C indicates cases; D, deaths; P, present]

Place		October–December, 1927	January–March, 1928	April, 1928	May, 1928	June, 1928	July, 1928	August, 1928
Angola	C	151	47	7	1			
	D	2						
Congo	C	77	36					
Cuanza-Norte	C		1					
Cuanza-Sul	C	9	10					
Zaire	C	5						
Brazil (see also table above):								
Porto Alegre	C	5	1					
British East Africa (see also table above):								
Zanzibar	C	2						
	D	1						
Chosen	C	4	48	20	152	49		
	D	1	16	6	38	21		
Seoul	C		1					
Ecuador: Guayaquil	C	6	35	19	31	11	35	38
	D		1					
France	C	25	34	6	15	10	10	6
Gold Coast	C	4	4					
Greece	C	9	36	1	22	31	9	3
	D		4		1	2	1	
Latvia	C	2	1				1	
Mexico (see also table above)	D	346	256					
Morocco	C	622	132	19	25	10	55	1
Nigeria (see also table above)	C	316	592	173	194			
	D	81	84	46	53			
Persia	D	2	7					
Portugal (see also table above)	C		258		98	74		
	D		30		9	3		
Spain (see also table above):								
Madrid	D	1						
Union of Socialist Soviet Republics:								
Railways, etc	C	33	59					
Other territories in Europe	C	1,255	1,717					
Transcaucasus, Siberia, and Central Asia	C	81	25					
Ukraine	C	48	27					

TYPHUS FEVER

Place		Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Apr. 8–May 5, 1928	May 6–June 2, 1928	June 3–30, 1928	July 1–31, 1928	Week ended— August, 1928 4	11	18	25	September, 1928 1	8	15	22	29
Algeria:																	
Algiers	C	1	3	9	4	13	32	3	1	4	3	2	1	1			
	D		1		2		6										
Oran	C	2	10	4	11	4	7	16	1	1	1	1					
	D				1		1										
Austria: Vienna	C	1															
Bulgaria	C	13	18		26		16	P	P		3	5	2	2			
	D	1	4				2				2						
Sofia	C	1		20	1	20	14	1						3			
	D						6										
Chile:																	
Iquique	C							1									
	D							1									
Talcahuano	D			1													
Valparaiso	C		1				1	2									
	D						3										
China:																	
Manchuria—																	
Harbin	C				2	16	23										
Kwantung	C				17	293	539	431	60					1			
South Manchuria Railway Zone	C						10	6									
Tientsin	C					2	2					1					
Chosen (see table below).																	
Czechoslovakia (see table below).																	
Egypt	C	9	17	2	3	11	7										
	D	2	8	1	1	2	3										
Alexandria	C							1	1				1		1		
	D												1				
Assiuot Province	C						2	2			2						
	D						2				1						
Assouan Province	C										1						
	D																
Behera Province	C			29	32	43	7	2									
	D				7	7	2										
Cairo	C			2	4			1									
	D			1	4			1									
Dakalieh	C						1	1									
Gharbieh Province	C			23	14	5	4	1									
	D				5		3										
Keneh Province	C			5	38		1										
	D				7		1										

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

TYPHUS FEVER—Continued

[C, indicates cases; D, deaths; P, present]

Place		Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Apr. 8–May 5, 1928	May 6–June 2, 1928	June 3–30, 1928	July 1–31, 1928	Week ended— August, 1928 4	11	18	25	September, 1928 1	8	15	22	29
Egypt—Continued.																	
Menoufieh Province	C				28	9	5										
	D				3	3	2										
Port Said	C							2		4	3	1			1		
Suez	C					1		4	1	1	1	1		1		5	1
	D					1											
Great Britain: London County	C						2										
Greece: Piræus	C						1										
Hungary: Budapest	D						2	2									
Ireland:																	
Belfast	C					2	1										
	D						1										
Irish Free State	C	1			1	4											
Cork County	C				1												
Dublin	C													3	1		
Galway County—Oughterard	C							10									
Kerry County—																	
Cahirciveen	C								1								
Tralee	C															1	
Japan (see table below):																	
Hiogo	C						1										
Yamagata	C					2	2	2									
Latvia (see table below).																	
Lithuania (see table below).																	
Mexico (see also table below):																	
Durango	D							1									
Guadalajara	D					1		4									
Mexico City, including municipalities in Federal District	C	5	8	12	8	19	14	10	4	2		4	7	1	1	6	
	D		4	3	1	2		3	2			1	1				
Monterey	D			1													
Morocco	C	1,051	316	748	591	280	214	153	39	2	2	1					
Palestine	C	5	10	7	6	4	8	9	5	3	3	3	2	2	3	3	3
Peru (see table below).																	
Poland	C	346	265	382	144	226	134	96	7	19	11	18	17	19			
	D	19	26	25	12	17	6	5									
Portugal: Oporto																	

Portugal: Oporto	C	1						1						1				
Rumania	C	39	68	141	142	99	80	33	8	1		7	5	3				
	D	9	5	11	12	8	11	1	1				1	1				
Syria: Aleppo	C						2				1							
Tunisia	C	4	1	18	19	7	7				1		7					
Sfax	C																	11
Union of South Africa:																		
Cape Province	C	1	P		P	P	P	P	P	P	P	P						
Natal	C	1	2		P	3	P	P										
Orange Free State	C	P			P	P	P	P										
Transvaal	C					1		P	P									
Union of Socialist Soviet Republics (see table below).																		
Yugoslavia (see table below).																		
On vessel S. S. Gaika at Durban, Natal, from Mauritius	C		1															

Place		January–March, 1928	April, 1928	May, 1928	June, 1928	July, 1928	August, 1928	September, 1928
Chosen	C	896	210	241	182			
	D	88	19	32	24			
Chemulpo	C	2		2				
Gensan	C	1						
	D	1						
Seoul	C	10	28	18				
	D	1	2	4				
Czechoslovakia	C	25						
Greece: Athens	C	4	13	11	9	6		
	D		2	2	1	1		
Japan	C			21				
Latvia	C	27	4	65	2			
Lithuania	C	223	66	64	32	8	11	
	D	22	3	3	1			
Mexico (see also table above)	D	46						
Peru:								
Arequipa	D	2	1					
La Oroya	C	P						
Turkey	C	17		7	2	6	4	
	D	1		1			2	
Union of Socialist Soviet Republics:								
Railways, etc	C	199						
Transcaucasus, Siberia, and Central Asia	C	17						
Ukraine	C	1,476						
Other territories in Europe	C	5,167						
Yugoslavia	C	34	10	19	16	12		
	D	3	1	3	1	3		5

CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued

YELLOW FEVER

[C indicates cases; D, deaths; P, present]

Place		Jan. 15–Feb. 11, 1928	Feb. 12–Mar. 10, 1928	Mar. 11–Apr. 7, 1928	Apr. 8–May 5, 1928	May 6–June 2, 1928	June 3–30, 1928	Week ended— July, 1928 7	14	21	28	August, 1928 4	11	18	25	September, 1928 1	8	15	22	29
Belgian Congo: Matadi	C	14	1		2	2														
	D	13																		
Brazil:																				
Aracaju	D					2														
Bahia	C						4									1				
	D													1		1		1		
Estancia	C		1																	
Pernambuco	C						1													
Rio de Janeiro	C					2	48	10	12	10	8	6	4	4			4	4	1	3
	D					2	15	5	7	9				2						
Sao Felix	C						P													
Dahomey: Grand Popo	C						3													
	D						2													
Gold Coast	C					2														
Ivory Coast	C						1													
	D						1													
Abidjan	C						1	1												
Ferkes-Sedougou	D											1								